The Excavating Engineer

(FORMERLY STEAM SHOVEL NEWS)

PUBLISHED MONTHLY

Ten Cents Per Copy *One Dollar Per Year*

Vol. 10 **MILWAUKEE, DECEMBER 1913** **No. 3**

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BOT OF MINES

ADDRESS ALL COMMUNICATIONS TO

THE EXCAVATING ENGINEER PUBLISHING COMPANY

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267 NATIONAL AVENUE MILWAUKEE, WIS., U. S. A.

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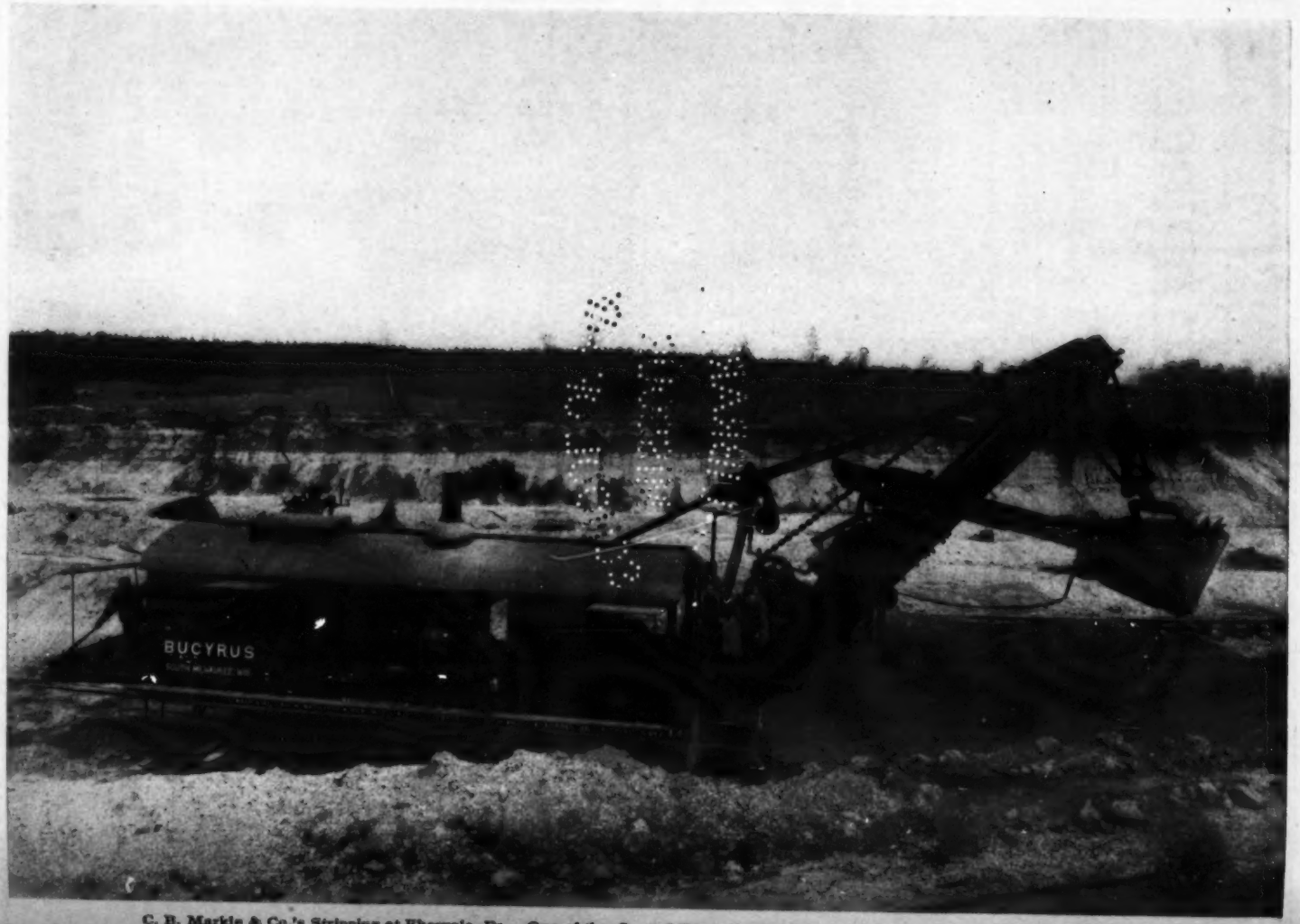

C. B. Markle & Co.'s Stripping at Ebervale, Pa. One of the Central Pennsylvania Quarry Stripping and Construction Company's 70-C Bucyrus Shovels at work.

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The Excavating Engineer

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Stripping Anthracite in Pennsylvania.

IN northeastern Pennsylvania, there exist extensive deposits of anthracite, a great portion of which is suitable to stripping operations by steam shovels. This formation has, in past ages, been subjected to great pressure which folded and metamorphosed the strata.

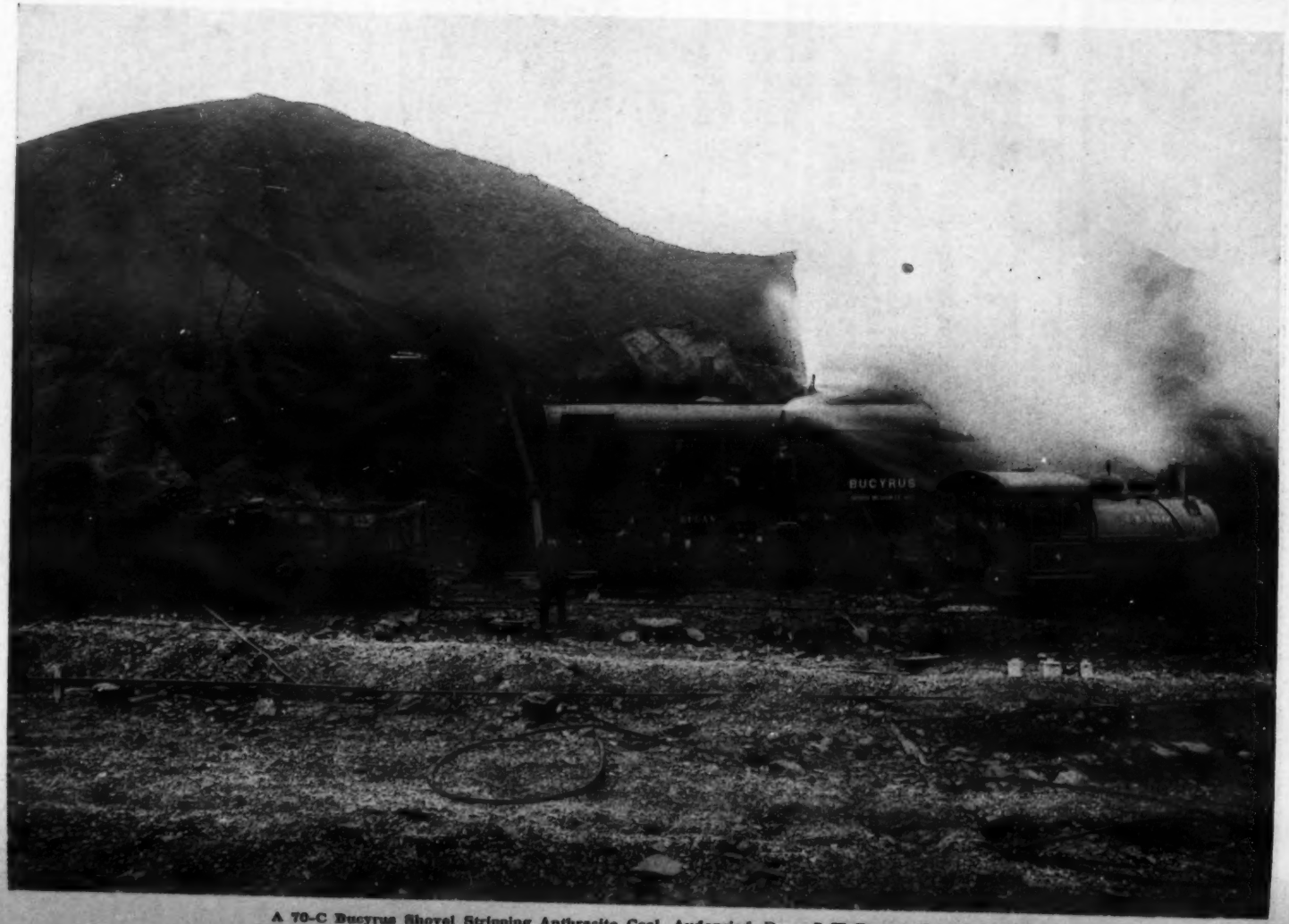
In several places the Mammoth bed was closely folded; and later, after the strata above were eroded, canoe-shaped basins of anthracite were left, some of which are of fairly good size.

In the Morea section there is a cover of rock in the center of the pocket; in the Derringer, or Black Creek, district the coal is covered with soil, the erosion having been deeper than in the western middle field . The first large pocket found in the eastern middle field was at Hollywood, near Milnesville, about 10 miles directly east from Derringer; it is probable, therefore, that other pockets will be found between, and possibly each side of, these two. Until recently the coal mined at Derringer came

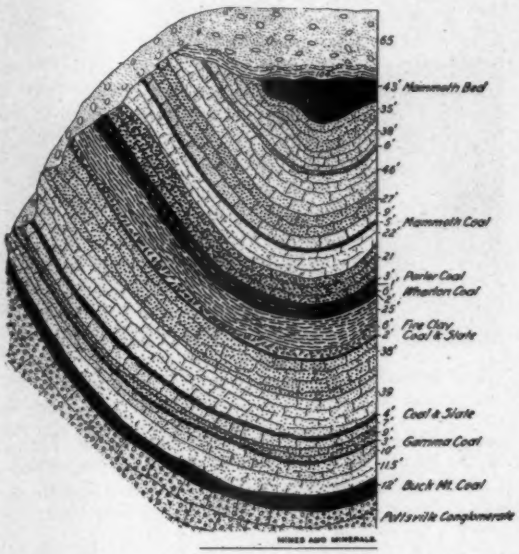
Lehigh & Wilkes Barre Coal Company's Stripping at Green Mountain. A. B. Dick's 70-Ton Bucyrus Taking First Cut.

To illustrate more fully the conditions that prevail, a section of the Morea coal pocket is shown on the next page. Morea is near the eastern end of what is known as the western middle anthracite field while Derringer, the place to be described, is in the western part of the eastern middle field about 12 miles directly north of Morea and on another mountain range. These two mountains run diagonally, and merge near Hazelton. In no other section so far as known, are these canoe-shaped coal pockets found, and being in different fields their sections naturally vary, which makes the coal beds between the Mammoth and the Buck Mountain difficult to correlate, particularly as in one place a bed will be thin and mixed with slate while in another place it will be excellent coal.

from what engineers believe is a split of the Mammoth bed 5 feet thick; the Parlor bed, 3 feet thick, 43 feet below the Mammoth split; and the Wharton bed, 6 feet thick, separated from the Parlor bed by 1 foot of slate. Work has just commenced on the Wharton bed, while the Gamma coal, 3 feet thick, and the Buck Mountain bed, 12 feet thick, just above the Pottsville conglomerate, have not been touched. Within a comparatively short time the coal pocket, shown in one of our illustrations in section, was discovered and immediately diamond drill holes were put down to ascertain its length, width, and thickness. These holes disclosed the fact that it is a canoe-shaped basin about 1,200 feet long, with an average thickness in the center of 43 feet; a width at the top of 104 feet; and a dirt cover that will



A 70-C Bucyrus Shovel Stripping Anthracite Coal, Audenried, Pa. J. H. Dugan, Contractor.

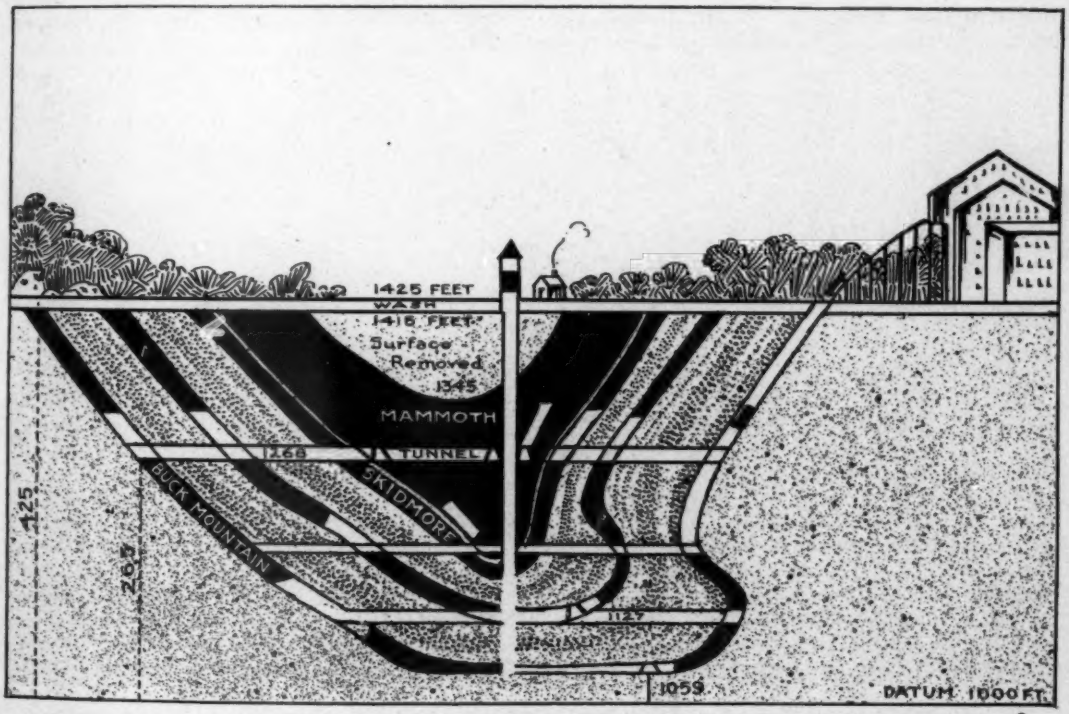


SECTION AT DERRINGER

probably average 40 feet in thickness. Stripping is now being successfully carried on in some localities to a depth of 100 and even 200 feet.

The coal in most of the veins, especially the Mammoth, is from ten to forty feet thick; consequently, before the introduction of the steam shovel it was necessary to leave from 40% to 60% of the coal to form pillars. This has practically necessitated shovel operations, as by this method all this waste is saved.

The extensive use of modern steam shovels for stripping anthracite coal was started some five or six years ago. Prior to that time shovels in this region were few and the type now obsolete. With the old type of shovel the coal operators did not consider it profitable to strip 4,000,000 yards of overburden to uncover 1,000,000 tons of coal which is the limiting ratio of the present practice. When the modern shovel was first introduced it was used extensively for stripping overburden from the coal vein, the coal itself being mined by hand. However, since the small revolving shovel has been perfected, equipment of this nature has become widely used for loading coal into cars for the breaker,



Section of the Morea Pocket

A 70-C Bucyrus Shovel Stripping Anthracite Coal, Audenried, Pa. J. E. Dugan, Contractor.

Mining Coal at Reliance Stripping, Mt. Carmel, Pa., with a 40-R Bucyrus. P. & R. C. & I. Co.

Stripping at Treskow with a 70-C Bucyrus. J. H. Dugan.

at the present time indeed, there are twenty or thirty handling coal in the Hazelton, St. Claire, Pottsville, Mahanoy City, Shenandoah, Centralia and Mount Carmel districts. There are at present more modern shovels used here than in any other territory of this country with the exception of the iron range of Minnesota. Among the well known users of this equipment are the Locust Mountain Coal Company, W. H. Loomis Contracting Company, A. E. Dick Construction Company, Charles Kehoe & Company, J. H. Dugan, N. J. Cuyle & Son, Smith & Campion, Rhodes Construction Company and the Central Pennsylvania Quarry Stripping & Construction Company.

A typical sample of steam shovel stripping may be found at Green Mountain, where the A. E. Dick Construction Company have a contract with the Lehigh & WilkesBarre Coal Company for stripping about 2,000,000 cubic yards from the Mammoth vein.

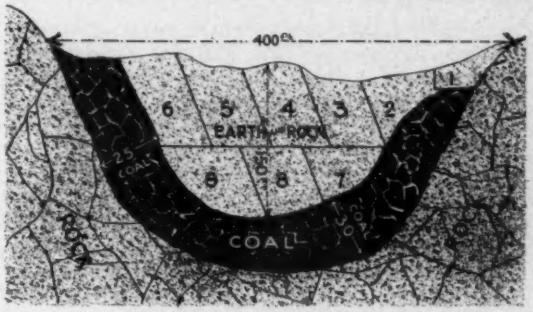
An 18-B Bucyrus Shovel Mining Coal for the Breakers After Overburden Has Been Stripped Down to Coal Vein. Lehigh & Wilkesbarre Coal Co., Green Mountain, Pa.

The area of the cut, section of which is shown on page 87, is about one mile long and from 400 to 600 feet wide. The view on page 83 shows the first lift being taken off. A Bucyrus 70-ton shovel is illustrated loading 4-yard Western cars hauled by Vulcan locomotives.

One of the most important problems of stripping under these conditions is the proper location of the dump. The first danger to be guarded against is depositing the material on underlying coal, as the material must be rehandled if it becomes necessary at some future time to mine this coal. Consequently, when it is possible the overburden should be deposited in a cut from which the coal has already been removed.

Such a condition is not always found, however, and consequently it is often necessary to haul the material a mile or so from the shovel.

The overburden is usually removed in 20 foot lifts. These lifts are generally taken completely across the cut. The reason for this is two-fold; first, for reasons of drainage, and second, to make possible the maintenance of a runaround track to the shovel in order to permit the continual operation of loading. This latter arrangement is shown on page 83. The material handled is for the most part clay, sand, rock and conglomerate. Unless rock is encountered, the shovels dig this overburden without the aid of blasting, but in the former case,



A. E. Dick's Stripping at Green Mountain, showing Lifts.

explosives are required to break down the material. Tripod drills are used, and the holes are drilled to the depth of the lift.

The Bucyrus 70-C shovels used in this region average from 20,000 to 35,000 cubic yards monthly. Sometimes very rapid work is done. On April the 6th of this year, N. J. Cuyle & Sons' 70-C Bucyrus, when working on the Lehigh Valley stripping at Hazelton, loaded 83 four yard cars in 53 minutes. The material was slate. As the cars measured 4¼ cubic yards, the shovel actually loaded 357 cubic yards in this period.

Another problem is hauling the material out of the cut. On the first cut, it is possible to get the dump on a maximum grade of one-half of one per

The Central Pennsylvania Quarry Stripping and Construction Company's Stripping at the Black Hawk Mine. Two 70-C Bucyrus Shovels at Work.

cent; but as the cut is deepended it eventually becomes necessary to haul the cars including the locomotive up a grade of from 8% to 10% by means of a hoisting engine.

The coal for the shovels is mined by hand from the outcrop, loaded into dump cars and hauled to the shovels. Water is usually pumped from nearby streams to a tank centrally located on the job. From here it is run to the shovels and locomotives by gravity.

The work of the Central Pennsylvania Quarry Stripping & Construction Co. at Harleigh is the largest in the field. Here twelve shovels are in operation. The Locust Mountain Coal Co., at Shenandoah, are doing their own stripping with three 70-C Bucyrus shovels. They intend to remove 7,000,000 cubic yards of overburden from 4,000,000 tons of coal.

Power Development at Turners Falls, Massachusetts.

THE Bates & Rogers Construction Company, of Chicago and Spokane, have been engaged, for the past year and a half, on an interesting and complicated piece of work for the Turners Falls Company, at Turners Falls, Massachusetts.

The work consisted in enlarging an existing canal and in rebuilding a portion of a dam. At the present time, the contract is practically complete except for a few finishing touches.

The history of the power development at Turners Falls has such an important bearing upon the present work, and is withal so picturesque, that a mention thereof would not seem out of place here.

Many years ago, before the railroads were developed, the Connecticut River was utilized as a means of commerce, by way of Long Island Sound, between New York City and the small towns strung along the river's bank.

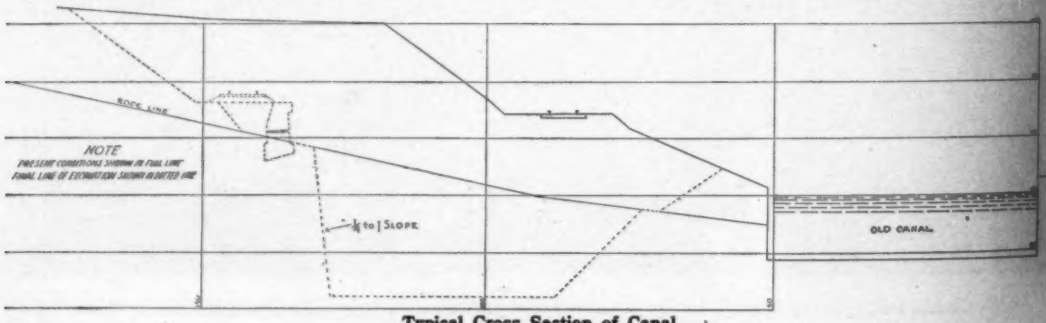
Nearly one hundred and twenty-five years ago a company was chartered to build a system of locks and canals to circumvent the rapids and falls. In 1866, seventy years later, with the development of steam power for transportation, the Turners Falls Company acquired control. A rock-filled crib dam, 30 feet high and 1000 feet long, was constructed across the river, and a canal 50 feet wide was excavated along the river bank in order to direct

70-C Bucyrus in Canal Cut.

the river's current to the operation of mills which were rapidly being constructed along the banks. Then came the age of electricity; and in 1904 work was commenced widening and lengthening the canal for the development of hydro-electric power.

The canal was widened from 50 to 150 feet and was lengthened 1000 feet. A power plant was installed with 7000 H. P., and the electric energy was distributed to various industries in the valley. This development utilized less than one-half the available water during eight months of the year.

With the growth of modern industry it has become necessary to use all the available water



Typical Cross Section of Canal.

possible, consequently plans were laid to lengthen the canal 1½ miles, to widen the old canal for a distance of 2,200 feet and to construct a new power house, which, under a 60 foot head, could develop an aggregate of 48,000 horse-power, with a transmission system of 175 miles, connecting 22 townships and 27 towns, the second largest development in New England.

As a shovel job, the work was beset with many difficulties. The rock elevation varied considerably which made progress in some of the cuts quite slow as a large amount of blasting was necessitated immediately in front of the shovel. As many of our illustrations indicate, particularly our cover view, the buildings were so close to the line of work that considerable care constantly had to be exercised.

A branch of the N. Y., N. H. & H. R. R. skirts the edge of the old canal, upon which traffic could not be disturbed. Four bridges and many water lines crossing the canal had to be maintained with as little interference as possible. Finally water had to be kept in the old canal just alongside the new one.

In spite of the above difficulties work has progressed very satisfactorily. The canal work involved the excavation of 75,000 cubic yards of earth, 90,000 cubic yards of rock and the placing of 6,000 cubic yards of concrete in retaining walls, etc.

Work was started in April, 1912, and water was let into the new canal about the first of July, 1913. The plant comprised a 70-C Bucyrus shovel, three 10x16 Baldwin locomotives, forty 4-yard two-way Koppel dump cars, one Ingersoll-Rand Imperial Type motor driven air compressor, six Ingersoll-Rand and Sullivan 3¼ inch drills, three hammer drills, four hoisting engines, one one-yard Chain Belt and one one-half yard Smith concrete mixers, besides teams, track and miscellaneous small tools.

As above stated, the old canal is 50 feet wide and carries 10 feet of water. The new section is 65 feet wide on the water line 45 feet wide on the bottom and designed to carry 18 feet of water. It is eight feet deeper than the old canal.

The two canals are separated by a core eight feet to twelve feet thick at the water line, perpendicular

70-C Bucyrus, Coming Down Stream on Final Cut, Turners Falls Power Development.
Bates & Rogers, Contractors.

Fig. 1. Upper End, Looking Up Stream. About 12 feet of Cut Unfinished.

Fig. 2. Side of Canal Before Trimming.

Fig. 3. Excavation for Retaining Wall at Lower End.

Fig. 4. Completed Retaining Wall Below *Fifth* Street Bridge.

Power Canal Construction, Turners Falls, Mass., Bates & Rogers, Contractors.

on one side and with a 1:1 slope on the other. This core was trimmed as fine as they dared, in order to obtain as large a canal section as possible; the eventual plan being to deepen the old canal 8 feet, or to the same depth as the new canal, and to remove the core between the two. Naturally every yard of material taken out in the dry under this contract is just so much money saved on the future work.

The general method of procedure was as follows: The retaining walls along the side opposite the old canal were constructed along the top of the ledge after the steam shovel had been through and cleaned off the rock. The canal was then blasted below

Water in Old Canal. Core and Finished Side.

these retaining walls. At the lower end, where the canal was mostly in earth excavation, the walls were put in first in sheeted trenches, and the canal excavated inside the wall. This method of doing the work was made necessary as stated before by the fact that the Railroad, which runs along this side of the canal, had to be kept in operation continuously during the job. The walls were built, therefore, in order to hold up the railroad while the canal was excavated along side of it. This is shown in the photograph on page 88.

The specifications required that the sides and bottom of the new canal be trimmed to within 6 inches of the engineers' lines. As the channeler which was tried did not prove a success, the following general method was adopted: The main shooting was done within two to three feet of the line on the sides, and to within about one and one-half feet of the bottom, and the remaining two feet was carefully trimmed off, partly by hand and partly by small holes drilled about two feet apart with jack hammer drills. On the sides this was done to templets, set up about 50 feet apart.

Figure 2 shows the untrimmed rock face, and Fig. 4 the final smoothness of the side. Although the nature of the rock prevented this work from being done absolutely according to specifications, the work, as finished, presents a good smooth surface and insures a uniform section of the canal.

In general the material was blasted by holes drilled about 6 feet apart and approximately 16 feet deep, shot with Dupont 40% gelatine dynamite, 12 to 20 sticks being used in each hole.

A considerable amount of dobying was necessary, which, of course, delayed the shovel considerably.

The excavated material was taken off by narrow-gauge trains to a dump along the bank of the river, just above the work. The haul averaged about 3,000 feet. The dump was a large field which had formerly been flooded at high water. This has been raised to a height of from 8 to 12 feet.

About 200 men were employed, working ten hours a day in summer and nine hours during the winter months. The shovel gang, besides the shovel crew, consisted of six pitmen.

During the summer months Bates & Rogers have been engaged upon the completion of the new half of the dam being constructed on the Turners Falls side of the river, and the building of additional head gates.

Next year the present canal will be extended for about two miles. This involves 900,000 yards of earth and 100,000 yards of rock excavation. A

Upstream from Middle of Canal. Third Shovel Cut. Rock Blasted for Excavation.

new power house will also be built at this point. It is expected that the work will be completed and the power house in operation before January 1st, 1916.

The work has been in charge of B. O. Cresap, of Wheeling, West Virginia, for the contractors. B. F. Safford, of Lowell, Mass., is consulting engineer.

Mrs. Alleyway: "Your 'usband do wear 'is 'air terrible short".

Mrs. Slumdwell: "Yes—the coward"! —*Sketch.*

Fig. 4. Completed Retaining Wall Below Fifth Street Bridge.
Power Canal Construction, Turners Falls, Mass., Bates & Rogers, Contractors.

Fig. 2. Excavation for Retaining Wall at Lower End.

Revolving Shovel Operation on the Mississippi River Power Company's Project, near Keokuk, Iowa.

(In connection with the extensive construction and improvement work in and about Keokuk and Fort Madison, Iowa, The Mississippi River Power Company have recently built a macadamized road 12 miles long between Keokuk and Montrose, Iowa, and a dike at Fort Madison to protect property in that vicinity from the rise in the waters of Lake Cooper caused by the construction of the Keokuk Dam.

On both these pieces of work, Cameron & Joyce of Keokuk, had sub-contracts for excavation on which they used an 18-B Bucyrus revolving shovel equipped with a 7/8 yard dipper.

The following article was written for The Excavating Engineer by Engineer Jones, who is in charge of this shovel.—THE EDITOR.)

DURING July and August of this year, Cameron, Joyce & Co., of Keokuk, Iowa, were building for The Mississippi River Power Company, 12 miles of wagon road, nine to ten feet wide, from Keokuk to Montrose, Ia. The road was first made to grade through heavy cuts by a steam shovel owned by the Power Company. As the hauls were short, and as the road runs along the side of a bluff for a good part of the way so that a considerable part of the material was wasted directly over the edge to build up one side of the road, only two or three dump wagons were required.

A revolving type of shovel was used requiring an engineer, a fireman, a watchman and two pit men.

The sub-grade for the macadam bed was made by Cameron, Joyce & Co. with wheeled scrapers and a 20th Century grader. This sub-grade was made 12 inches deep, after which it was rolled with a steam roller by the Power Company. Crushed rock was then laid in two layers and screenings scattered over the top layer; each layer being rolled separately.

The rock for a number of miles of this road was crushed at the Burlington Stone Quarries, Montrose, and placed in large stock piles at Sandusky, Ia., being hauled there by the railroad instead of hand labor. a Bucyrus 18-B revolving shovel was used to load the rock from these piles, which resulted in quite a saving over hand work. The shovel required an engineer, a fireman and most of the time only one pit man. About fifteen common road wagons, with dump boards, were used to haul the crushed rock from the steam shovel. The average output was about 130 wagons per day of ten hours. As the haul was for the most part long, ranging from one ane one-half miles to short distances, two small dipperfuls were put on each wagon. In addition to the above equipment three or four dump wagons were used and two full dipperfuls were put on them. The estimate for each wagon was 1½ cubic yards or about 200 cubic yards per day, which was the average output of the machine. While this estimate looks small, it was demonstrated a paying proposition. The machine could load a wagon a minute, there being very little trouble experienced by reason of the mules and horses becoming frightened at the noise and operation of the machine. The drivers never left the wagons, simply standing up off their seats, indeed some would remain seated while their wagons were being loaded. There was not a wagon broken by the loading.

18-B Bucyrus, Starting in at Fort Madison.

One of the great advantages of the revolving shovel in this class of work proved to be that when finishing a cut through the pile, the machine did not have to be moved back for a new cut, but was simply turned around and worked back the other way.

Very little cleaning was required by hand, one or two men picked up with small hand shovels whatever scattered rock was left by the machine.

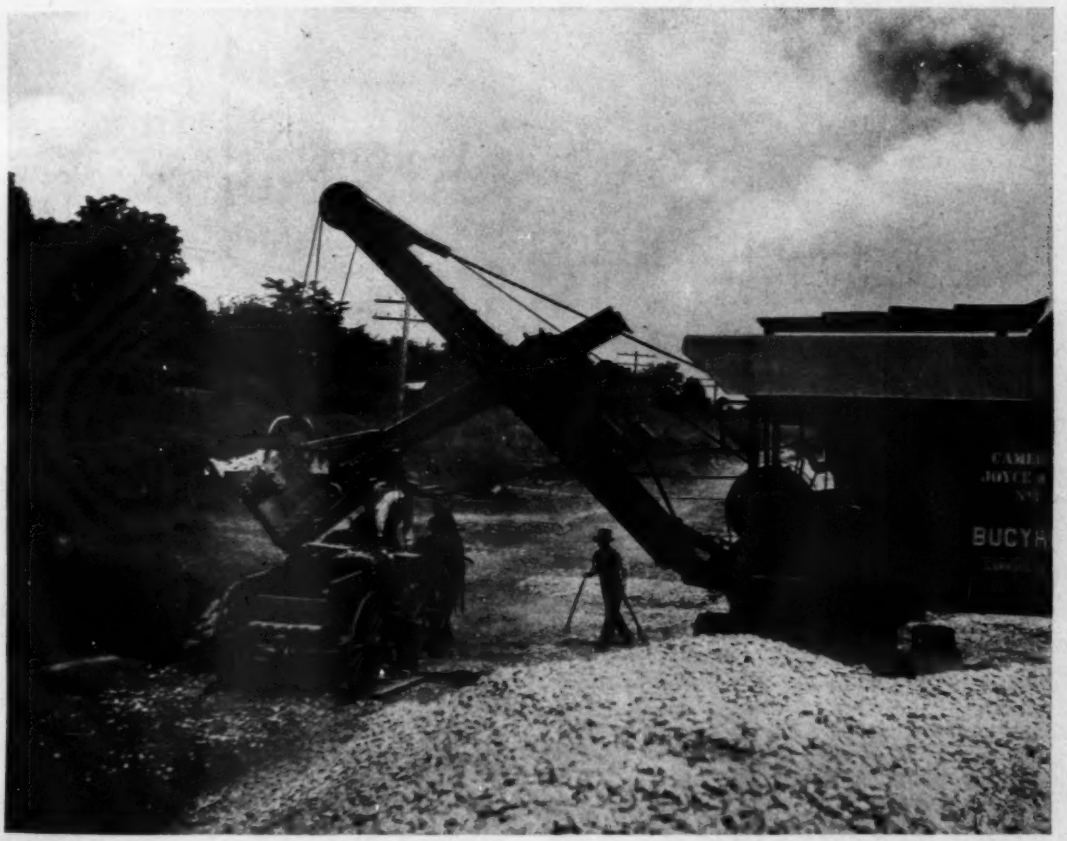
It was found that a considerable saving was effected by the mere fact that the wagons were kept

moving much quicker than they could be by any other method.

There was practically no expense on the shovel for repairs. One ton of coal, one lubricator of cylinder oil, one pint of black oil, ¼ pound of grease, ¼ pound of waste and two tanks of water, pumped by a gasoline engine, ran the machine for a day of ten hours. The shovel, from the time I started with it until we finished, with the exception of a few hours when some trouble was experienced with the levers, was always ready to load wagons and never caused a delay. The boiler was the finest steamer ever placed on a machine, so says everybody who has had anything to do with it.

In moving the shovel from Montrose to Sandusky to begin work, it would travel on the hard ground without any timbers under the wheels, and was transported on a barge, 20 feet wide and 40 feet long, on the Mississippi River, as shown in one of our views. The shovel was moved to the river, a distance of a few hundred feet, and then on to the barge over a runway made from flat timbers. This was done under its own steam. A gasoline motor boat towed it to its destination on the river. The whole move consumed about 2½ hours.

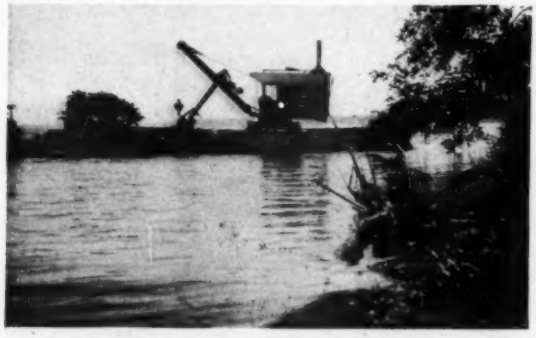
After finishing the Sandusky stock pile at noon, Mr. Smith, the general manager, came to me at 3:00 P. M. and gave me orders to move the shovel onto the barge, a distance of about 500 feet to river. I had to build a roadway for about 200 feet over three railroad tracks, a very steep incline, out of railroad ties and all kinds of poor timbers, but had the machine on the barge at 6:30 P. M., as one of our views shows it. The motor boat left with it at once for Fort Madison, about 19 miles up the river on Lake Cooper, arriving there at about 12 M. At 4:30



18-B Bucyrus Revolving Shovel Digging Sandusky Stock Pile. Cameron & Joyce, Contractors.

A. M. Sunday, we started to unload with six men and one team of horses. At 6:00 A. M. we had it off and I blew the whistle at 6:30 P. M. Sunday, about one mile from where we landed. We used two teams of mules, six men, one foreman, besides myself and the fireman, and had to timber a good part of the way across sandy plowed fields. As we did not get started moving until 9:00 A. M. after getting off the barge, I thought it was quite a record move for a distance of twenty miles.

We are building here at Fort Madison, about three miles west of the city, a dike for The Mississippi River Power Co. in order to protect the Prairie Oil & Gas Co's property against the water of Lake Cooper, caused by the dam at Keokuk. The dike is about a quarter of a mile long, twelve feet high, 3 to 1 slope on the outside and 2 to 1 slope on the inside, being six feet wide on top.



On the Barge, Enroute to Fort Madison.

We are using an outfit of nineteen 1½ cubic yard cars, in three 5-car trains and one 4-car train. The best days work was 471 cars in ten hours, but the average has been about 350 cars. We put two dipperfuls on a car, loading the train in three to four minutes. The cars are pulled with four teams, mules and horses; one snap team is used to pull the cars up the incline onto the dike and one snap team to pull the cars onto the trestle.

The material is black loom and sand; and would be good shovel work, it if did not stick in the dipper quite badly. The pit is about 800 feet long, a short distance from where the dike starts.

I have a fireman, a pitman, and a night watchman. There are two foreman on the job, about eight dumpmen and one time-keeper.

The shovel burns about 1½ tons of coal and takes about four tanks of water, pumped by a gasoline engine. The water is very dirty and we have to blow the boiler down twice a day. The fireman uses about one quart of cylinder oil, one pint black oil, one pound pressure cup grease and one pound waste per day of ten hours.

Portion of the Fort Madison Dike.

When the material is dumped out of the cars, a man keeps a 2 inch stream of water running on it to settle the dump so as to make a compact dike.

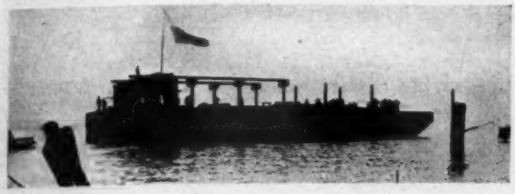
The shovel stood on bents built of oak planking 4 feet wide and 12 feet long. The planks are 3 inches thick, 12 inches wide and 12 feet long. I have four bents or platforms in all, and use the dipper and chain to handle them in working. It makes a saving in labor and expense for planking in operating.

The Power Company have recently installed a Class-80 Atlantic Type shovel and a 70-C Bucyrus in the same pit in order to load sand for the purpose of raising the A. T. & St. F. R. R. Co's main line at Shopton. These tracks will be raised three or four feet and the embankment made eighty feet wide to form a levee to protect the neighboring property from the waters of Lake Cooper, which was formed by the Keokuk Dam.

This photograph shows the Gamboa Dike a few minutes before the famous explosion, which opened the canal from sea to sea. The last preparations are being made. As may be noticed, spectators are gathering to witness the historic event. The Bucyrus wrecking crane in the foreground is helping to rescue some of the machinery before the water is let in.

Panama Dredges Under Construction

The two 15-cubic yard dipper dredges, *Gamboa* and *Paraiso*, which are being built by the Bucyrus Company for the Isthmian Canal Commission are



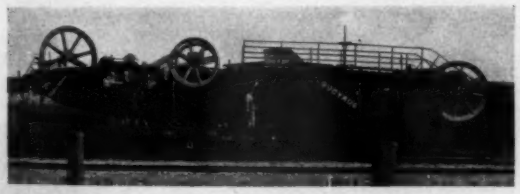
The Gamboa Immediately After Launching.

now well under way. The *Gamboa* was launched about six weeks ago, and the *Paraiso* will be in the water by the time this number reaches our readers.

We publish here a photograph of the hull of the *Gamboa* immediately after the launching. It is hard for the average reader, even though he be a contractor of many years' experience, to realize the tremendous size of these—the largest dipper dredges that have ever been constructed. The photograph of the 15-cubic yard dipper which we publish, showing thirty-four men in its mouth, gives a small idea of its size. These men are standing on a platform, built about half way down the dipper; thirty-four more could have been put underneath this platform.

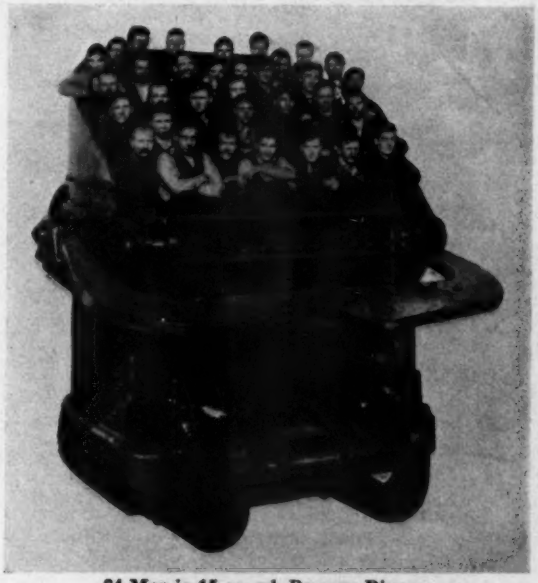
The figure of the man standing beside the boom, gives a fairly good comparative idea of its size. This boom, complete with the machinery, weighs 113,000 pounds.

In order to grasp the size and capacity of these machines we may say that the dipper and dipper handle weighs 130,000 pounds; which is as much as 20,800 ordinary No. 2 hand shovels. Basing our computations on the figures given by Mr. Fred W.



Boom of 15 cu. yd. Bucyrus Dredge for Panama.

Taylor, the noted efficiency engineer, in his treatise entitled "Shop Management", we find that it would require 1140 efficient laborers, digging loose gravel and casting into dump wagons, to handle in the same time as much material as this dredge can dig in one cycle, or approximately one minute. It must be remembered, furthermore, that the dredge is digging earth and rock, material that cannot possibly be handled by hand. Moreover, this material is being dug 50 feet under water and dumped into a scow alongside of the dredge. Carrying our figure further, it would take one efficient man, digging loose gravel and casting into a dump wagon, 19 hours to excavate enough material to fill the dipper, a feat which the dredge can perform in a few seconds. Again, this dredge can load ten ordinary two-horse dump wagons with one dipperful. Our ancestors would have to have been equipped with a mammoth imagination even to conceive the size of a machine with a capacity such as this.



34 Men in 15 cu. yd. Panama Dipper.

The Easton Car & Construction Company Purchases the Ernst-Wiener Company

One of the most interesting announcements of the year in the manufacturing field, is the purchase of all stock, rights, plant, office records, equipment and "good will" of the Ernst-Wiener Company, by the Easton Car & Construction Company, of which Mr. W. E. Farrell is the leading spirit.

The company has a newly erected plant at Easton, Pa., that is completely equipped with new and special machinery, specifically adapted to the fabrication of the well-known Ernst-Wiener line. Everything will be sold hereafter under the trade name of the Easton Car & Construction Company, and with a large stock of their products on hand, the new organization is in a position to effect immediate deliveries. It solicits the continued patronage of former customers and assures others that it is an active bidder in the industrial railway and structural steel markets; all opportunities to bid will be thoroughly appreciated and will be accorded immediate attention.

The Excavating Engineer

[FORMERLY STEAM SHOVEL NEWS]

A Monthly Publication Devoted to Excavating *and* Allied Subjects

Subscriptions, payable in advance, $1.00 a year for 12 numbers, 50 cents for six months.

To foreign countries, including postage, $1.00 or its equivalent, 4 shillings; 4 marks; or 5 francs.

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Advertising copy should reach Milwaukee Office by 10th of month, before date of issue.

Address all communications to the company.

THE EXCAVATING ENGINEER PUBLISHING CO.

Bradley Van Brunt, Manager *and* Editor

267 National Avenue Milwaukee, Wis., U. S. A.

Construction Outlook

Industrial conditions at the present time are a peculiar mixture of pessimism and optimism; of extreme activity and of extreme depression; some manufacturers are having their record months, while others "are flat as a pancake".

During the last month the municipal field has been quite active, the drainage field has been exceedingly busy, but conditions are as slack as ever in railroad construction. A considerable portion of the blame for the present conditions in railroad construction can, with all fairness, be laid to the condition of the railroads. Gross earnings have continued satisfactory and idle cars are practically nil, but few of the leading lines have been able to show a proportionate gain in net earnings.

As we pointed out last month, the answer lies in the raise of rates. It is very satisfactory to note, in this connection, that Edgar E. Clark, Chairman of the Interstate Commerce Commission, has, in a public address, favored higher rates for the railroads. It is an indisputable fact that when the credit of the railroads is impaired, they are unable to spend money on improvements and extensions, and when there is no railroad building, there is no work for railroad contractors.

The disposal of the tariff question removes a certain amount of uncertainty which has disturbed manufacturers but the Mexican situation and the currency legislation are still disquieting factors. In the opinion of many business men the steadiness of industrial conditions is remarkable in the face of the important measures which are now pending. It is easy to recall times when business would have been absolutely demoralized in just such a situation.

We look for a gradual improvement in conditions, but cannot see it in the very near future.

Federal Drainage Law Introduced in Congress

Speaker Clark recently introduced in the House a comprehensive bill providing for the establishment of a flood protection and drainage fund. The purpose of the bill is to provide protection against floods, reclaim wet lands and to develop interstate commerce by water carriers.

This is the bill which has been prepared and promoted by the special committee of the National Drainage Congress, under the leadership of John H. Nolen of Missouri and Edmund T. Perkins of Chicago.

Senator John Sharp Williams of Mississippi has promised to substitute this bill for one introduced by him some time ago, provided it meets with his approbation.

The bill carries an appropriation of $20,000,000 in addition to providing for the setting aside for the flood protection and drainage fund a stipulated proportion of the money received from the sale and disposal of public lands in the states of Alabama, Arkansas, Florida, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Ohio and Wisconsin and the territory of Alaska, beginning with the fiscal year ending June 30, 1914.

A Warning

A Mr. C. J. Thompson has recently been representing himself as an officer or salesman of the Bucyrus Company. That company wishes it understood that such a man is not now, and never has been in any way connected with it.

Young men, you are the architects of your own fortunes. Rely upon your own strength of body and soul. Take for your star, self-reliance. Don't take too much advice—keep at your helm and steer your own ship, and remember that the great art of commanding is to take a fair share of the work. Think well of yourself. Strike out. Assume your own position. Put potatoes in a cart over a rough road and the small ones go to the bottom. Rise above the envious and jealous. Fire above the mark, you intend to hit. Energy, invincible determination, with the right motive, are the levers that move the world. Be in earnest. Be civil. Read the papers. Advertise your business. Make money and do good with it. Love your God and fellowmen. Love the truth and virtue. Love your country and obey its laws.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review in this column such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the prices named.

SULLIVAN ROCK DRILLS. Bulletin No. 66-H, dated August 1913. Size 6"x9", 56 pages. Highly illustrated. Dealing with the Sullivan "Hy-Speed" and "Liteweight" Rock Drills. The detailed description of these drills is preceeded by introductory remarks concerning the subject of rock drills in general. Both the above types of drills are carefully described and the important parts illustrated. The bulletin is replete with interesting photographs of Sullivan drills at work under various conditions. Sullivan Machinery Company, Chicago.

CONCRETING IN COLD WEATHER. Paper covered booklet 6"x9" 38 pages and cover. Illustrated. A treatise dealing with the method of handling concrete successfully in freezing weather. Description of tests of specimens from concrete laid in freezing weather. The influence on strength. The value of proper precautions and a description of these precautions. Tables and illustrations. Hints to inspectors.

Universal Portland Cement Co., Chicago.

CONCRETE HIGHWAY BRIDGES. Paper covered booklet—6"x9", 40 pages and cover. Printed in two colors. Highly illustrated.

In no sense a treatise on bridge construction, but rather a collection of views of structures, gathered from many parts of the country which may serve as a basis for a careful study on the part of these contemplating bridge work.

The information accompanying each illustration has been compiled from data furnished either by the engineer or the contractor directly concerned with the work.

The purpose of this book is to suggest the many advantages offered by concrete as material for bridge construction and to emphasize its claims by submitting illustrations of typical structures that have given uniform satisfaction.

Universal Portland Cement Co., Chicago.

CEMENT DRAIN TILE. Booklet, paper covered—6"x9", 40 pages and cover.

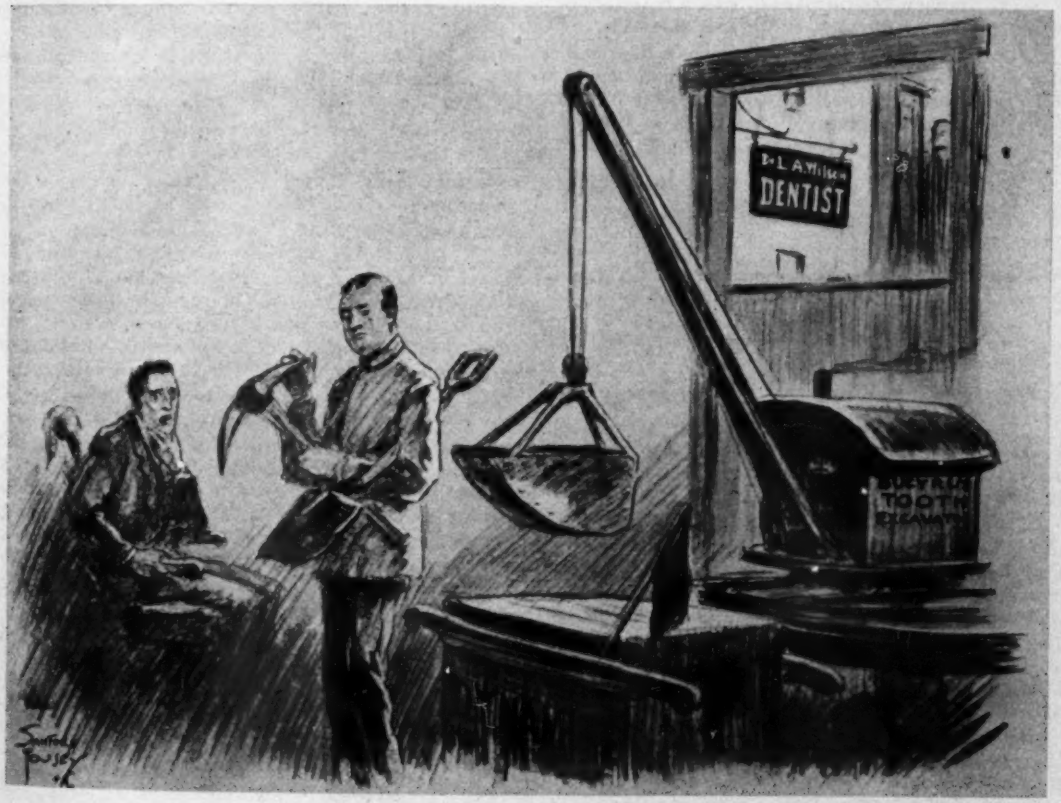
Instances of the successful and unsuccessful use of cement drain tile and reasons therefor—Highly illustrated.

Universal Portland Cement Co., Chicago.

TYPICAL SPECIFICATIONS FOR THE FABRICATION AND ERECTION OF STEEL HIGHWAY BRIDGES. Circular No. 100—Pamphlet 6"x9", 31 pages.

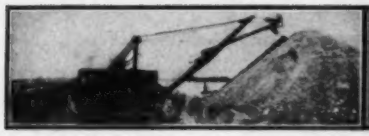
Issued by the Department of Agriculture, Office of Public Roads "with the view of furnishing a suitable guide for local highway officials in fixing requirements to which bridge structures must conform."

Office of Public Roads. U. S. Department of Agriculture.

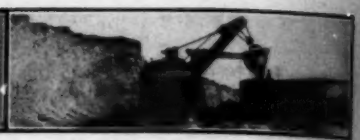


Judge, Nov. 1st.

As the Dentist Looks to the Shovelman.



FIELD NOTES



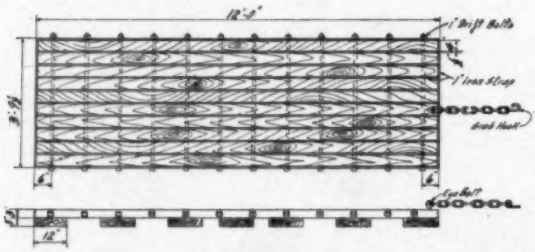
DISCUSSION IS INVITED FROM MEN IN THE FIELD ON SUBJECTS HERE PRESENTED

An Approved Float For Revolving Shovel Operation

The sketches shown below illustrate an approved form of float, which has been used with much success in connection with the operation of revolving shovels.

As may be observed from the skecth, each float is built up of a combination of timbers and iron straps. The length over all is 12 feet and the width, 4 feet. 12′ x 3″ x 4″ timbers separated by ½ inch iron straps make up the body of the float. The whole is bound by another iron strap of the same dimension. It is held together by a number of one inch drift bolts, as the cross section sketch indicates. On the bottom of the float, running crossways, are 3″ x 12″ timbers; the purpose of which is to prevent warping and to add to strength and stability.

At one end of the float is an eye-bolt to which is attached a short piece of chain, at the end of which is a grab hook. When it is necessary to move, this chain is thrown around a dipper tooth and a hitch made.



Four floats are used, one butting up to the other on the long side, making a platform 16 feet long by 12 feet wide.

The shovel stands with its rear wheels on the third float. When it is necessary to move up, the shovel swings around, picks up the rear float and swings it to the front. The device works equally well whether the wheels are in the center of the float or in the cracks. Generally no blocking is used; the contractor simply flings a short length of 1 inch chain around one of the forward traction wheels.

The device has proved extremely satisfactory, efficient and economical. We know of a contractor who has used a set for seven years with practically no wear; indeed they look good for seven years more service.

Method of Pulling 70-Ton Shovel Up Steep Incline

Griff Hughes of Girardville, Pa. gives us a successful method of pulling a 70-ton shovel up an incline of 18 per cent without dismantling the dipper or the boom.

First: allow the dipper to hang immediately under the shipper shaft as far as the rack on the handles will permit. Insert a piece of 4″ x 6″ oak through the spokes of the thrusting gear, in order to hold the weight of the dipper and handles when the strain on the hoisting chain has been relaxed.

Fasten chain from the two outside teeth of the dipper to each corner of the car body so as to prevent the boom from swinging.

Dig a ditch, sixty feet ahead of, and at right angles to the shovel, 10 feet long 5 feet deep and 2 feet wide. This is to hold the "deadman". Dig another ditch 8 inches wide leading out from the center of the first ditch and running towards the shovel. This ditch is to provide clearance for the chain from the shovel which will be attached to the "deadman" buried in the first ditch, consequently it will be on an incline.

The timber for the "deadman" should be 12″ or 14″ in diameter, made preferably of oak.

Make fast a ¾ inch or ⅞ inch chain around the "deadman". This chain should be long enough to reach the top level of the inclined ditch.

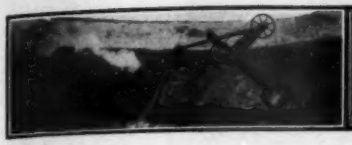
Next; take the padlock from the dipper bail and fasten it to the chain on the "deadman". Unreave the hoisting chain from the point of the boom sheave; run it through the padlock sheave and attach the end to the forward truck of the shovel by means of a stretcher made up of ¾ inch or ⅞ inch chain.

This will give a little better than two-thirds of the digging power of the shovel. It is well to bear in mind, however, that when the chain is taking the second wrap around the hoisting drum, power is being lost at the expense of speed. As the propelling gear is in the same train as the hoisting gear, this increase in speed on the hoisting chain will become too great for the propelling speed. In order to overcome this difficulty, shorten the hoisting chain by taking a bite in it.

The shovel should be carefully blocked at all times to prevent it from running downhill.

Aw, What's the Use!

A right-handed writer named Wright,
In writing "write" always wrote "rite.
He meant to write "write",
But he couldn't write right—
Who started this darn thing, anyway?



DEVICES YOU OUGHT TO KNOW ABOUT

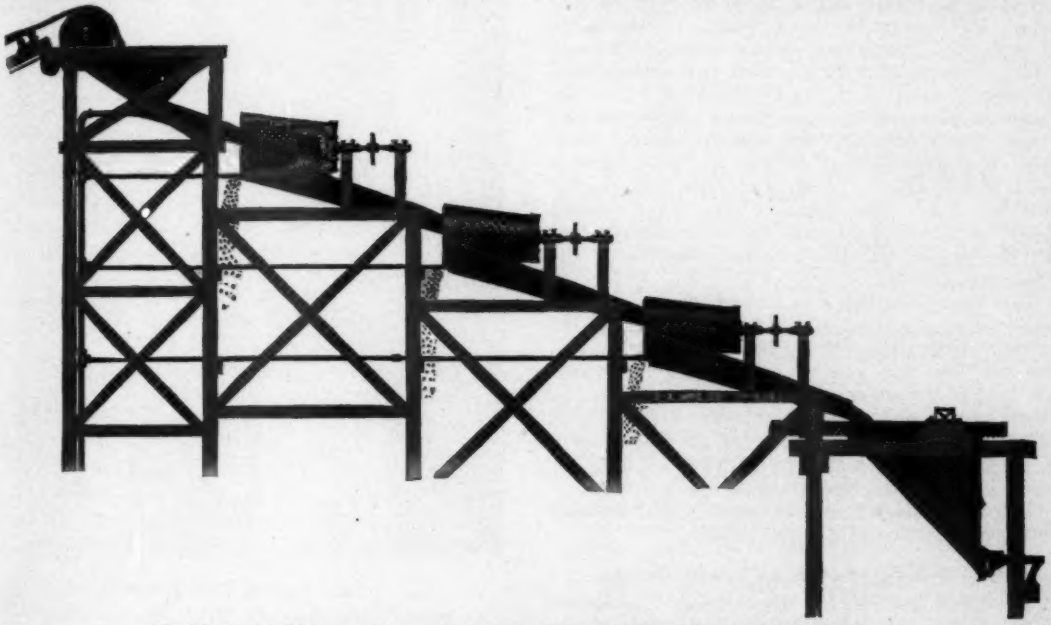
PRINCIPLES OF GRAVEL WASHING

A description of the methods employed in modern washing plants

It is now a well understood fact among engineers and contractors that the quality of aggregate is of greater concern in securing hard, uniform concrete than is the quality of the cement. In fact, almost any commercial brand of portland cement will produce a high grade of concrete provided the aggregate and the mixing are up to standard. Unwashed and untested gravel however is a doubtful proposition and simple ignorance of this fact has caused many failures.

A few bank gravels are remarkably free from the coating of any foreign substance and are used without danger in concrete work. In structural work, however, where the strength of the concrete is of great importance, the only safe course to follow is through the use of washed gravel. Even that dredged from rivers is usually coated with slime and is as dangerous as that from a pit containing a large percentage of clay and loam.

The best principle for a washing plant is one that will roll and tumble the sand and gravel in a rapidly running stream of water. At the same time, it should also size the gravel and allow the oversize



"S-A" Gravel Washing System, Showing a Typical Gilbert Screen Arrangement.

The reason for the importance of clean aggregate is that where stone or gravel is used that is coated with clay or dirt, the cement cannot reach the stone but is allowed to set up against this film of foreign matter which serves simply as a form for the cement; the concrete will thus have only the strength of the cement as it cannot become thoroughly united or fastened with the sand and stone or gravel. Where washed sand and gravel is used the cement coats the clean surfaces of the aggregate during the dry mixing and then when wet the cement fills every void or cavity both in the gravel and in the spaces between the gravel.

to fall into a crusher which will redeliver its product to the first washing screen, thereby saving and washing the entire product of the bank.

The most practical working-out of this principle is found in the Gilbert Screen which is used in 90 per cent of the gravel washing plants operating in the United States. This screen is conical in shape, entirely open at one end and supported on a horizontal axis. This allows a chute to deliver the gravel and water to the extreme interior of the screen and the material agitated by the revolution of the screen works its way out against a jet of water and is thus thoroughly washed and screened.

A series of these screens arranged as shown in the accompanying illustration, and provided with the various necessary sizes of perforations, may successively reject to the bins the various sizes of gravel.

"S-A" Improved Gilbert Screen.

The advantages of this type of screen for washing gravel have made it the most widely used screen for this service. The fact that under this system of washing gravel the larger stones are rejected first relieves the screen of much wear. Furthermore, the rejections from each screen must work out against a stream of water so that the washing and tumbling process is much accentuated while the sizing is done more accurately, due to the washing of the stones through the perforations. In the "S-A" Improved Gilbert Screen, an inner skirt is added which takes the wear of the material as delivered from the chute. This improvement secures better screening due to better distribution over the screen and also lengthens the life of the larger screen plate.

The "S-A" Settling Tank is another important feature of this system as by this arrangement the fine sand passing through the last screen is separated from the clay and loam in solution in the water. This is done by allowing the sand to settle to the bottom of the tank while the solution flows off from the top. As the sand accumulates, its weight opens the gate, allowing the sand to be drawn off until the weight is so reduced that the gate again closes.

The manufacturer and designer is the Stephens-Adamson Mfg. Co., of Aurora, Illinois.

The Testing of Panama Towing Rope

The approach of the time when the largest vessels will be passing through the Panama Canal is indicated by tests recently made at the works of John A. Roebling's Sons Company at Trenton, N. J., of the wire ropes to be used as towing lines at the great locks at Gatun and Miraflores.

Forty wire ropes each 400 feet long have so far been made by the Roeblings for this purpose. Each rope has six strands with 37 wires in each strand, the strands being twisted around a hemp center.

The ropes are one inch in diameter and have a four foot loop at one end. The specifications for the ropes called for a tensile strength of 37 tons each. To obtain this requires a tensile strength in the wire of 260,000 pounds per square inch. Pieces cut from the ends of the ropes when broken in the testing machine showed the ropes to have strengths ranging from 12 to 15 per cent in excess of that called for by the specifications.

In towing boats through the locks four electric locomotives will be used for each vessel at each lock. Two of these locomotives will be connected by the wire ropes to the bow and two to the stern.

In making a test such as is shown in the picture a piece of rope is securely fastened at each end in the machine. The number of pounds pull on the rope is indicated at all times by the balance of the beam of the scale along which the weight is moved.

Testing Panama Towing Rope.

Oh, I See!

A physician was driving through a village when he saw a man amusing a crowd with the antics of his trick dog. The doctor pulled up and said: "My dear man, how do you manage to train your dog that way? I can't teach mine a single trick".

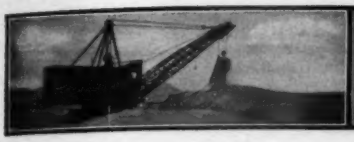
The man glanced up with a simple rustic look and replied: "Well, you see, it's this way: you have to know more'n the dog or you can't learn him nothin'."—*Ideal Power.*

A strapping German, with big beads of perspiration streaming down his face, was darting in and out among the aisles of a department store.

His excited actions attracted the attention of all the salespeople, and they hardly knew what to make of it. A hustling young man of the clothing department walked up and asked:

"Are you looking for something in men's clothing"?

"No", he roared, " in vimmin's clothing. I can't find my wife"!



SHOTS FROM THE FIRING LINE

Alabama

Morris—Reynolds-Henderson Co. of Morris, have been awarded a 60,000 cubic yard contract for a 5 mile branch of the Louisville & Nashville R. R. to Idaho Mines.

Birmingham—Birmingham Railway, Light & Power Co., 2100 First St., city, proposes early construction of an extension from Ensley to Fairfield and of the Owenton-Ensley line to Wylam.

Notes from Birmingham
by R. S. Byron

G. C. Hagler is now connected with Wade, Clower & Wade on their work at Dunnellon, Fla. in the capacity of foreman.

C. E. Herring was a caller in this city recently, but could not stay long as Marshall & Pack of Morris, Ala. got after him to take charge of their 70 ton Bucyrus shovel on their L. & N. work.

J. C. Carland & Co. are installing a new 85-C Bucyrus shovel on their L. & N. work at Lewisburg, Tenn. Mr. Howard Carland has charge of this work which means with this new machine and Howard's "get there" qualities something will be doing at Lewisburg.

Buchanan & Co. of Mt. Pleasant, Tenn. have just placed their order with the Bucyrus Co. through their Birmingham office for a Class 20 electric dragline machine for their Montana government work which consists of about a million and a half yards.

T. W. Crow of Crow Contracting Co. left November 16th for their Florida work. The Class 175-B Bucyrus dragline is now enroute to this work. Mr. Crow was accompanied by Mr. Harris Jr. who will remain on the work continuously.

Dan Downey of the James Downey Contracting Co. of this city has just left for Broughton, Ala. where he will take charge of J. T. McCarthy & Co.'s railway work for the Gulf, Florida & Alabama Ry.

R. K. Papin of the Davenport Locomotive Co. of Davenport, Iowa was a caller in this city last week. He is making a general tour of the south.

The awarding of the contract to construct drainage canals in Florida as stated in November issue of the Excavating Engineer and which was to be awarded November 10th has been postponed until December 19th, 1913.

James Downey of the James Downey Contracting Co. of this city has just returned from a very pleasant and "successful" hunting trip (so he says) in the Adirondack Mountains.

J. H. Johnson of the Crow & Harris Contracting Co. of Mt. Pleasant, Tenn. was a visitor in this city last week and reports that their work is moving along very satisfactorily and are experiencing fine weather.

B. F. Bertrand who is operating a Little Giant Vulcan shovel for E. T. Lewis & Co. at Nashville, Tenn. advises that they are getting along very nicely with their sewer work and that they expect to shut down for the winter in a short time as they are using the machine in the river bottom and are expecting high water soon.

James T. McCarthy of Gainsville, Florida was a visitor in this city the other day and is very busy with his Gulf, Florida & Alabama railway work in Florida and Alabama.

The Dailey Const. Co. of Chattanooga, Tenn. advises that they are making dirt fly with their new 70-C Bucyrus shovel on their N. C. & St. L. Ry. work near New River, Tenn. Mr. Meyers of the above company writes that they thought there was nothing like their 65 ton Bucyrus machine, but they have concluded that they have to "take off their hats" to the new 70-C shovel.

Wm. Nostrant of Toledo, Ohio, is operating a 70-C Bucyrus shovel for the Copeland-Inglis Brick at their brick plant near Birmingham. Mr. Nostrant just left a Victor shovel owned by the Toledo Terminal Ry. at work near Toledo, Ohio.

Reports from Reynolds-Henderson Co.'s work on the L. & N. near Morris, Ala. are that they are getting along very rapidly. Mr. Henderson advises that he received an estimate last month for 8000 yards with his 14-B Bucyrus revolving shovel. The material consisting of 60 per cent rock. This work is new work, they having finished their main line L. & N. work.

L. D. Cochran is erecting two new 60-C shovels for the Bucyrus Co. on J. T. McCarthy & Co.'s Gulf, Florida & Alabama railway work near Broughton, Ala.

Reports from A. J. Twiggs & Son work near Augusta, Ga., which consists of building levees along the Savannah River in Augusta, are that the work is moving along very nicely. John E. Powell, supt. of the above work advises that they have about one year's work before them. They are using a 70-C Bucyrus shovel on this work and realized a very good estimate last month by turning in 63,000 yards bank measurement in 23 days. The material consists of very hard clay and shale. The above company have very up-to-date equipment on this work, using Davenport locomotives and Western 12 yard air dump cars.

G. A. Wiggins is running and G. F. Mann craning on A. J. Twiggs & Son 70-C Bucyrus machine No. 1219 on their levee work near Augusta.

The Morrow-Kennedy Co. of Atlanta, Ga. will soon finish their work on the Southern R. R. near Atlanta and will move their last steam shovel off the job December 5th. The above company have made very good time with this contract. They used 40-C and 60-C Bucyrus shovels on this work together with Western cars and Vulcan dinkeys. The above company have a very up-to-date outfit and Mr. Kennedy advises that he is ready to bid on work and can be reached at Atlanta, Ga.

There is to be awarded in Savannah, Ga. on the 25th of November a large sewer contract consisting of several miles of sewers. The sewers will run in size from 8 to 30 inch pipe. The trenches will be from 8 to 15 feet in width and from 12 to 20 feet in depth. Jordan & Co. Savannah Bank & Trust Bldg., Savannah, Ga. are the engineers in charge.

C. W. Lane & Co. of Atlanta, Ga. report that their work in So. Carolina is moving along very nicely and that their 85-C Bucyrus shovel that they are using on this work is certainly moving the dirt.

Arkansas

Little Rock—The Little Rock & Hot Springs Electric Ry. Co. is preparing to construct an electric railway from Little Rock, Ark., to Hot Springs, Ark. The line between these two cities will be 50 miles long, exclusive of the terminals calling for 4½ miles of city tracks. The contract for the construction of the railway has been awarded to the Arkansas Interurban Construction Co., Little Rock, Ark., and this company expects to be

ready in a short time to let sub-contracts on the work. The general contract includes the following:

Earth excavation (cu. yds.)	629,470
Solid rock, excavation (cu. yds.)	147,800
Loose rock excavation (cu. yds.)	47,730
Embankment (cu. yds.)	773,170
Pile bent trestles (lin. ft.)	3,036
Frame bent trestles (lin. ft.)	4,088
Concrete masonry (cu. yds.)	6,370

Iron bridges; three 30 ft.; three 100 ft.; one 130 ft.; one 150 ft.

W. H. Garanflo, Little Rock, Ark., is president of the electric railway and L. Garrett, Little Rock, is secretary and general manager. H. C. Couch, Little Rock, is general superintendent of construction.

California

Notes from San Francisco

J. I. Lacey, who has been running shovels at various points on the coast for a good many years, dropped into town the other day and will probably go from here to Ely, Nevada. He has recently been operating a model 71 Marion for Grant Smith & Co. in the northwest.

Notes from Los Angeles and Vicinity

By G. H. Hutchinson.

Chris. Kaehler, secretary of the A. U. entertained the following at a Dutch picnic given by the German Soldiers club at Karstadt Grove, Playa Del Ray: Joe Eckersley, Al. Lowe, Albert Schlagel, and William Gallagher. We are informed it was some picnic; all that was left of four barrels of beer was the staves and the hoops and a faint recollection that something happened. Together with the liquid refreshments was the usual eats characteristic of the "rous-mit-em" picnic.

B. D. Denner, cranesman, recently from Twohy Bros. work Portland, Oregon, has recently been taking in the city. He says the town looks good to him and believes he will stay. He entertained a bunch at the U. S. Hotel with the same old story.

Jack Gray, steam shovel engineer, has been in the city taking care of his father who has been very ill and who died in Los Angeles on the 27th. The remains will be taken to their old home in Wisconsin for burial.

Robert Sherer & Company are a busy bunch just now. In addition to the extensive work they have under way in the construction of the San Diego & Arizona railway, they are getting lined up on the Trona railway job, consisting of 38 miles, contract price $400,000.00. They have a big bunch of stock on this particular piece of work and contemplate starting a shovel in about two weeks. In addition to the grading the contract calls for laying the steel and ballasting. One end of this line terminates in Death Valley where all the big thirsts come from.

Charley Crowley, member of the firm of Robert Sherer & Company, is back on the job and is working about sixteen hours a day and has apparently entirely recovered from the aggravated case of rheumatism that annexed itself. For a time Charley thought it would be a long drawn out affair like the Mexican trouble, but some Doctor in San Francisco got under Charley's hide with some boiler compound that hit the spot, cured the rheumatism and benefited his disposition very materially.

Harry Thorne, assistant mine superintendent, Chino Copper Company, Santa Rita, N. M., was in Los Angeles recently on a vacation. It is needless to say Harry was welcomed by his old associates here, who are always on the lookout for a new arrival, providing he is well supplied with New Mexico money. The entertainers all knew there was a stranger in town and made good use of their time. Harry promises to come back again with another roll.

Thorne tells us that Ed. Flynn's disposition has improved; Bill Gallagher says this is a surprise to him as he was always under the impression that he never had one.

A. D. Lowe, cranesman from Seattle, is in town trying to pass himself off as a tourist, but he was recognized as a boom cat on his first day in town.

Joe Ecclesey, when he is not working the cafes, is craning a Little Giant at Alhambra. Joe is having a hard time distributing out his $125.00 per. In making a touch from a friend he was asked what had become of his last month's wages and replied "Say, you ought to have better sense than to ask such a foolish question".

Jimmie Westbrook left Los Angeles a day or two ago for Salt Lake City, to work at Bingham, Utah. I hardly believe he will stay in Utah long enough to become a Bishop, furthermore he has not the necessary requirements.

W. R. Glenn one of the old time shovel runners, now in the farm implement business in Moline, Illinois, was a visitor in Los Angeles lately. Glenn has developed into a dramatic art critic. Bill Gallaher was hunting up the various places of amusement and endeavoring to show Glenn a good time. He took him to a couple of our best theatres, but Glenn thought they were punk. He finally wound up at Harlow's Cafe where there happened to be an especially good bunch of entertainers, a broad smile issued from Glenn and he remarked,—"Now Bill, there's some class to this".

Chris. Keahler, secretary of the A. U. has a grouch that won't come off, somebody stole his best girl and Chris. has not set them up for a week. No use trying to make a borrow from Chris. until the atmosphere clears up.

Robichoux & Lowe are operating a 70 ton shovel for Sherer & Crowley on the Searles Lake railroad.

Jess Harper, shovel runner for the Pacific Rock & Gravel Company, was married last Sunday night, and has now quit buying marble fronts for the saloon keepers.

Notes from Los Angeles

Case Sweet, shovel runner, recently from the P. G. & E. work, is in Los Angeles.

Hank Riebel has gone out to San Bernardino for Grant Brothers.

Harry Dillon, contractor, is making so much money on his contract at San Bernardino that a Chinaman recently tried to relieve him of some of it by issuing a forged check. Dillon says he don't mind other people helping him to spend some of it, but he wants to be in on it.

Billy Gallagher reports business good in his two apartment houses; all the rooms are full,—not the guests. Bill is worrying these days about getting thin, he only weighs 212 pounds, and has to buy a suit of clothes about every thirty days to keep it all covered up.

S. Van Horn is going to Phoenix for his health.

Bob Roberts returned from Broom Creek, Arizona.

Case Sweet, C. Lewis and J. Hughes came from Emigrant Gap where Case Sweet was running a 70 ton Bucyrus for the P. G. & E. and is now bound to old Mexico to relieve Sullivan on the San Diego & Arizona R. R.

James Westbrook is spending his second honey-moon at Santa Ana, California.

H. Horn, proprietor of the U. S. Hotel had a gang of shovel runners over to Harlow's Cafe to take out a few of the wrinkles. Harlow is very popular with the shovel boys as he was originally the proprietor of the U. S. Hotel, and is now running one of the finest cafes in the west.

T. Carander, shovel runner, has moved here with his family from Portland, Oregon, and is open for engagements.

Canada

Canadian Pacific railway will construct new connecting lines aggregating 750 miles, including branch line from a point near Swift Current, Sask., on Saskatchewan main line to Sedgswick, Sask., distance of 280 miles; also Weyburn branch line of 436 miles.

Halifax, N. C.—The photograph reproduced herewith shows one of the Cook Construction Company and Wheaton Brothers' 100C Bucyrus shovels being towed to the upper end of the work which is in progress on the Halifax terminals. Two 100C Bucyrus shovels are digging solid rock here.

Frank Mullins is superintendent of the south end. He is digging out blasted rock with one of the shovels. E. C. Deavonshire is superintendent of the north end and is using the other 100C shovel to strip down to rock. After this rock cut has been blasted, the shovel will go over it again.

W. A. Normandy is operator and A. Oikle is cranesman on the Bucyrus shovel at the south end, and James Boothby and W. J. Poupore is running the 100C at the north end.

New Glasgow—McDougal Bros. are operating a 65 ton Bucyrus shovel just south of the Eastern Car Company on the East river improvement work.

Notes from Montreal and Vicinity

Section 2 of the Welland canal, involving five and a half million dollars, has been awarded to Baldry, Yerburgh & Hutchinson of London, England and St. Catharines, Ont. There will not be much done on this section before next spring.

The contractors on section 1, namely The Dominion Dredging Co., Ltd., have at present three dredges on the job and will have seven by the end of this year.

Section 3, on which the Confederation Construction Co. are working, are making very rapid headway. There are at present five shovels on the job and they expect to have considerable work done before the snow flies.

Tenders for section 5 were called for the 18th of November and it is expected that section 4 will be advertised for shortly.

The government received tenders on the pier work for the Halifax terminals, but did not accept any tenders and decided to split up this work into three or four sections and call for new tenders.

Colorado

Notes from Denver

By H. N. Steinbarger

J. F. Callaghan, of Seattle, Wash., a prominent contractor of the northwest, spent a few days in Denver early in November looking up equipment for some steam shovel work, which he was figuring on at the time. We hope he has been successful in his bid.

Denver—Colorado Northern railroad has been incorporated with $5,000,000 capital, to construct 100 miles of railroad from Denver & Salt Lake railroad, near confluence of Elk & Bear rivers, Colorado, north to connection with Union Pacific railway at Rawlins, Wyo. Headquarters of company will be at Denver, Colo., and Toronto, Ont.

Craig—Colorado, Wyoming & Northern R. R. contemplates beginning construction in the spring on its 116 mile line from Craig to Rawlins, Wyo. A 25 mile branch from West Hayden is proposed also. George W. Bowen, Denver, Colo., president.

Connecticut

Ansonia—Connecticut Co., 127 State St., Hartford, has awarded $15,000 contract to B. M. Beard for cutting ledge on North Main St., Ansonia, preliminary to double tracking its electric railway. Contract for the latter has been let to O'Neil Bros., Hartford, Conn.

Florida

Miami—The Everglades Sugar & Land Co. announce that the date for receiving proposals on the 22 miles of drainage canals and 27½ miles of dikes has been extended until 12 o'clock noon, Monday December 29th.

Georgia

Macon—W. Z. Williams & Co., Macon, awarded 300,000 cubic yards earth grading for new west yards of Central of Georgia Ry. here. About 32 miles of track in yards will be laid by railway.

Illinois

Beardstown—Proposals will be received at the office of Robert W. Hunt & Co., engineers, Insurance Exchange Bldg., Chicago, Ill. until December 17th at 2:00 P.M., for the excavation of 2,243,040 cubic yards of levee and ditch work, 292 acres of clearing and grubbing and six steel highway bridges. Plans and specifications may be seen at the engineers' office, or at the commissioner's office here. Clifford C. Garm is secretary and treasurer.

Beardstown—The bid of R. H. & G. A. McWilliams of Chicago was the lowest submitted for the improvements in south Beardstown drainage and levee district, consisting of 2,243,040 cubic yards of levee and ditch work and 292 acres of clearing and grubbing. Other bidders were: M. J. O'Meara & Sons, Cullom, Ill.; W. E. Callahan, Omaha, Neb.; M. Hayes & Sons, Janesville, Wis.; M. C. Connors & Co., Chicago. Bids were opened in Chicago October 17th, at the office of Robt. W. Hunt & Co., engineers.

Iowa

Muscatine—Sealed bids will be received at the office of the county auditor at Muscatine and Louisa counties, acting for and on behalf of the Muscatine-Louisa drainage district No. 13, until 11 o'clock, A. M., December 4th, 1913 for open ditch work aggregating 398,200 cubic yards. Alternative bids will also be solicited, based on alternate grade lines and cross sections aggregating 1,200,500 cubic yards.

Harman Engineering Co., of Peoria, Illinois, are the engineers and will be glad to furnish further information upon inquiry.

Wapello—Sealed bids will be received at the office of the county auditor at Wapello, Iowa, by the supervisors of Louisa county, acting for and on behalf of the Louisa county drainage district No. 15, until 11 o'clock, A. M., December 5th, 1913, for levee work aggregating 468,400 cubic yards.

Harman Engineering Co., of Peoria, Illinois, are the engineers and will be glad to furnish further information upon inquiry.

Chariton—Cameron, Joyce & Co., Keokuk, Iowa, and Kansas City, Mo., have let the following sub-contracts on their work for the Chicago, Rock Island & Pacific Ry. near Chariton: Grading, Joyce Bros. & Bagwell, Keokuk, Glen Roberts, Chariton; bridging and culverts, H. A. Kepler, Kansas City, Kan. The contract calls for 140,000 cubic yards team work and 60,000 cubic yards shovel work, 10 creosoted pile bridges, 9,500 lineal feet piling and 300,000 feet B. M. creosoted lumber for culverts and bridge decking, etc. The work is located 3 miles north of Chariton and is for a spur to open up coal fields.

Pocahontas—Contract for excavation in drainage district No. 74, including 13,000 cubic yards of open ditch, was awarded October 21st, 1913, to Linnan & Clancy.

Kansas

Muscotah—The Straight Creek drainage district, J. M. Ryan, secretary, is about to sell $12,000 of 6 per cent drainage bonds. As soon as same are sold, will advertise for bids for a drainage ditch, 130,000 cubic yards. H. B. Walker, state drainage engineer, Manhattan, Kans.

Winona—Colorado, Kansas & Oklahoma railroad will award contracts in about two months for the construction of an extension north from Winona, Kans. W. C. Fordyce, St. Louis, Mo., is president.

Notes from Pittsburg and Vicinity

By W. S. Russell.

The coal market is stiff with an early advance in prospect. The demand is brisk and practically all sizes are moving nicely. The weather continues quite cool, which stimulates consumption. It is assumed that there will be an advance of at least 25 cents per ton before December 1st. Present prices are as follows.: lump $2.50, nut $2.25, mine run $1.75, slack $1.50 per ton F.O.B. cars at the mines.

The twenty-five coal stripping steam shovels located in the Pittsburg field are all working and several of them are preparing to go on double shift, as the prospects are fine for a good winter's business.

There are good openings for parties having means, who may wish to engage in coal stripping; which is a very profitable business in the Pittsburg district. We know of several good fields of strip coal that may be secured either by purchase or lease.

We also know parties owning land who are looking for parties with means to join them in the coal stripping business.

The cost of a plant, including steam shovel, tram cars, track, locomotive, tipple with shaker screens, pumps, engine, water pipe, etc. will vary from $30,000.00 to $50,000.00; part of which may be purchased on several months' time. Communications may be addressed to the Pittsburg Machinery Co., Broadway, Pittsburg, Kansas.

The Nesch Coal Company are operating their new Bucyrus 175-B steam shovel at Frontenac on a field of 150 acres stripping coal for the Santa Fe railroad. Frank King is engineer and Jas. Nitchman is cranesman.

The Pittsburg-Scammon Coal Co. are stripping their 160 acre field a mile south of Scammon with a 150 ton Bucyrus steam shovel. Harry Miller is manager and reports they are very much pleased with the shovel which is doing fine work with very little expense for repairs.

We met A. W. Roy, of the Roy-Millner Coal Co. of Weir City, the other day. He said they were getting along well with their coal stripping on 48 acres about a mile and a quarter south of Weir City, also that they are very much pleased with their 150 ton Bucyrus steam shovel which opened up a box cut in 24 foot depth of overburden, clear across the field, which put their work in good shape. Also that the repairs on this shovel have been almost nothing, not a thing having broken since the shovel started ten months ago.

The Clemens Coal Co., Ira Clemens, general manager, with offices in the Globe building, Pittsburg, are operating a 150-B Bucyrus steam shovel on their north Pittsburg field. The stripping has, in some places, been unusually hard, a bed of hard blue shale of from five feet to fifteen feet in thickness having been encountered. The overburden on one side of the field reached a depth of 24 feet, but the shovel handled it successfully and is now in soft shale of moderate depth.

The C. H. Markham Coal Company, of Pittsburg, with office in the Globe building, are stripping coal on a 160 acre field at Curranville, eight miles north of Pittsburg, with a 150-B Bucyrus steam shovel, which carries a 60 foot boom, 2½ yard dipper and digs from 1600 to 1800 cubic yards of material per day of nine hours. James Shelley is engineer and Elmer Davis the cranesman.

The Haynes Coal & Mining Co., of Arcadia, Kans., are making a success of their coal stripping on their 160 acre field just over the line in Missouri, about half way between Mulberry and Arcadia on the Kansas City Southern R. R. They are stripping with a 95 ton Vulcan revolving shovel having a 59 foot boom, 2½ yard dipper and a capacity to handle from 1200 to 1500 cubic yards of ordinary material per day of nine hours. The stripping runs from 10 feet to 20 feet in depth. Coal about 3 feet thick. Their success is due to good management and practical ability. The three brothers are all workers. Tom and John are at the field every day in the week and Bill looks after the selling end of it. Their output is about 200 tons per day. We wish them continued success.

Capt. Dan Miller is still tearing up the ground with his 95 ton Vulcan revolving steam shovel near Scammon, Kans. He has worked at it steadily now for over 2½ years, and his forty acre field is over half stripped. This is a model stripping proposition and presents a fair example of what good intelligent management will accomplish.

The Ellsworth-Klaner Company are operating their two big five yard Marion shovels near Chicope on their coal stripping for the Central Coal & Coke Company. Bruce Weekly is engineer and C. B. Tinker cranesman on one; W. W. Wright is engineer and Bert Johnson cranesman on the other.

C. C. Dunbar is engineer and A. M. Herbeck cranesman on the Ellsworth-Klaner Company's Marion steam shovel at Midway, stripping coal for the Pittsburg Midway Coal Co.

The W. W. Patterson Coal Company's Model 250 Marion shovel is working every day stripping coal near Fuller, Kans. They are shipping about 200 tons per day on the Frisco R. R. J. O. Green is engineer and Arthur Chancellor cranesman.

Smith, Scott & White, the big contracting firm of Pittsburg, Kansas, are now running all three of their big 175-B Bucyrus steam shovels, stripping coal on their field near Chicope for the Central Coal & Coke Co. Chas. Pinkerton is engineer and Burt Williamson cranesman on No. 8. Ed. St. John is engineer and Roll Emmitt cranesman on No. 9, and H. T. Colson, engineer and Frank Stevens cranesman on No. 10. Two of these shovels are digging soft sand rock from 4 feet to 6 feet thick.

We shook hands with McFarland and Hubert the other day at their coal stripping mines near Minden, Mo. This company have a fine up-to-date plant and their field is opened up in good shape. They expect to ship between five and six thousand tons of coal in November if the weather is favorable.

Roy Davis is running a Bucyrus 150-B shovel for the Clemens Coal Co. at North Pittsburg. Arthur Glover is cranesman.

W. J. Donovan is running the Pittsburg-Scammon Coal Co.'s 150-B Bucyrus shovel and Mike Flaherty is cranesman.

G. B. Massey, foreign sales manager of the Bucyrus Company, spent several days in Pittsburg last week looking over the coal stripping, and accompanied by W. S. Russell, the company's southwestern representative, covered the entire field from Skidmore on the south to Arcadia on the north, a distance of about 41 miles in three days. Mr. Massey says that over in England they are stripping iron ore with various types of machines but have nothing equal to the revolving shovels in use here. The iron ore is nine feet thick with from 30 feet to 45 feet of overburden. He expects to introduce Bucyrus shovels to do this stripping in the near future.

C. D. Smith, of Smith, Scott & White, coal stripping contrators, spent several days at Pittsburg last week at the Stilwell Hotel.

Frank B. Wilcox, of Joplin, was in Pittsburg for a day or two recently, looking over the coal stripping.

The Pittsburg Machinery Co. have moved into new quarters at No. 806 Broadway, just above the Stilwell Hotel. They have rented an entire store building and are getting in a large stock of coal miners' and contractors' supplies, tools, etc. They also handle all kinds of mining machinery and are doing a nice business.

Louisiana

Baton Rouge—The Louisiana Contracting Company has been incorporated under the laws of the State of Louisiana. The charter of the company was published in full in the State Advocate Times of Baton Rouge of October 23rd. Article III of the charter states, in detal, the business for which the corporation has been formed, which, among other things, is to construct dredges, as well as to sell dredges and excavating machinery of every character and description; to construct levees; to undertake all character of dredge work; to construct locks, docks, etc. and engage in other lines of contract work. The capital of the company is fixed at $100,000. The directors are Rittenhouse Moore, Henry Goldthwaithe, Otis O. Ogden and A. M. Wheeler.

Texas & Pacific railway is considering the construction of an extension of its line from Thibodaux, La., to Bowie, La., distance of about 15 miles. C. H. Chamberlain, Dallas, Tex., is chief engineer.

Minnesota

Notes from Duluth and Vicinity

Frank N. Armstrong, mechanical engineer, of the Penn Iron Mining Company, at Vulcan, Michigan, promises something of interest in the way of a hydro-electric shovel in the spring. He is hard at work on the problem and has the machine partly constructed. With Mr. Armstrong's known ability, we feel confident, that he will have some interesting data for us when his machine is completed and we all wish him the greatest success.

Bids for the Duluth, St. Vincent road, on which figures were asked on October 25th, have been rejected and new bids will be called for in the near future.

Around the 1st of January, 1914, bids will be asked on about thirty miles of road work in Carlton county. Information regarding this work can be obtained from the engineer in charge, O. L. Dent, at Carlton, Minnesota.

Shipping in the iron industry is fast drawing to a close with one of the largest shipments on record. The figures have not been completed as yet as there are still a few days of shipping left. The storm which swept the Lakes on the 7th, 8th, 9th and 10th insts., has delayed shipments considerably. The larger mining companies on the Mesabe range intend to keep their stripping forces in operation all winter, with the view of holding their organizations together. Stripping during the winter time is more expensive, as far as handling the material is concerned, but this is more than offset by the maintenance of more efficient organizations, they consider.

Owing to the giving up of the Hill leases, by the Oliver Iron Mining Company, a number of important changes are looked for on the Mesabe range next year.

The Interstate Iron Company have installed a 12 inch hydraulic dredge, built by the Jenkins Pump & Dredge Company, on their properties at Grand Rapids, Minnesota, but owing to the early approach of winter they have not been able to accomplish as much as they had expected to. This operation will be watched with interest as it is a new adventure for stripping ore, although the method used has been in use for a number of years.

Mississippi

Clarksdale—Maynard & Fitz-Gerald announce that bids will be received by the commissioner of the Harris Bayou drainage district, Coahoma county, at his office until Thursday, December 4th, at 2:00 P. M. The work includes the construction of 30 miles of drainage ditches and about 8 miles of scraper ditches, aggregating about 815,000 cubic yards, The district has been fully and legally organized, and all the bonds have been sold.

Canton—Boyd & Bradshaw, Columbia, Miss., have contract for 13 miles of railroad out of this city for Merrill Lumber Co.

Missouri

Charleston—Contracts will be let by drainage district No. 29, Mississippi county on November 20th at 1:30 P. M. for 1,991,935 cubic yards of excavation and 739.1 acres of clearing. The work is divided into six sections, containing about equal amount of work. Each section will be let separately. Plans, specifications and estimates are on file in the office of the county clerk of Mississippi county at Charleston. L. T. Berthe is district engineer.

Maryville—The commissioners of one hundred and two drainage district No. 1, will meet at Maryville on December 3rd, 1913, to open bids on constructing the main ditches of the district. These ditches will be about 15 miles long, 8 feet wide at bottom, 8¾ feet deep, slopes ½ to 1, requiring excavation of 418,000 cubic yards. Certified check for 5% required with bid. W. L. Holbrook, Bedford, Iowa, is the engineer. The bonds of this district have been sold. Address H. H. McClurg, secretary of the board, Pickering, Mo.

St. Louis Items

By Tony Michel

Mulville Bros. of Alton, Ill. have 18,000 yards of nice team work to let near Hillview, Ill. Also have small piece of work for a five team outfit. Address them Alton, Ill.

The various Walsh Companies are making rapid progress on the Cache levee work at Mound City and Cairo, Ill. They have five steam shovels going full blast and will be finished there about December 30th.

Fred R. Jones of the Fred R. Jones Const. Co. passed through St. Louis the past week from a visit over some new work. We hope to report something new about them in next issue.

Retrenchment is the slogan with the various railways, steel and rolling mills in this vicinity.

Laborers of all kinds all nationality are here in swarms.

Anyone needing men now can get them quick and plenty of them. We also wish to state that they can be gotten for much lower wages than heretofore.

J. D. Lynch has some new work at Mattoon, Ill. We believe this is steam shovel work but as yet have not been advised definitely.

J. M. Brennan, for several years book-keeper and general office man for the Walsh Const. Co. of Davenport, Iowa has resigned his position with this Company.

Anyone needing an A. No. 1 construction man, or expert accountant will make no mistake to get in communication with Mr. Brennan. Address him 5044 Delmar Ave., or care Michel Labor Agency.

John Wingy Haley left for Helena, Ark., to take charge of Hannan & Hickey's team outfit there on levee work.

The Merrill Contracting Company, Century Bldg. St. Louis, have opened a new quarry just south of St. Louis. They expect to furnish stone for the new Capital building which will be let shortly.

Rust & Swidt have started work on their new contract up the river building another dike and dam partially across the Mississippi river and expect to work throughout the entire winter.

The Gould Const. Co. of Davenport recently secured the contract for the masonry and bridging on the Waterloo C. F. & Northern Ry.

The H. H. Hall Const. Co. of East St. Louis are starting a small shovel job near here. They have also various sewer contracts that will keep them busy the balance of this winter.

Geo. Lester the well known camp chef is idle, he writes, and would like to get located with some large company. He is ready to come on a moments notice. A wire to Cuba, N. Y. will reach him.

It is said that the Mobile & Ohio will let some very heavy work soon. This is a rumor however, not official.

Five thousand idle Bulgarians, Greeks, Austrians are in St. Louis today. If you need any wire, Michel Labor Agency.

Contractors who would like to have a copy of the *Excavating Engineer* and should be near the Michel Labor Agency No. 9 south 9th St., may call and ask for same. Or we will be pleased to mail you one free of charge.

Columbus S. Jones, the station contractor is in the market for some station work either railroad or levee. He has also a light steam shovel outfit idle. Address him care Michel.

New York

North Clymer—Joseph F. Ryan is operating a 70 ton Bucyrus shovel for Wilson & English at this point.

New York—Degnon Contracting Co., 60 Wall St., city, at $2,185,000, was awarded Sec. 3, 7th Ave. subway.

New York—Canavan Bros. Co., at $2,401,307, and Rapid Transit Subway Construction Co., at $2,531,252, were low bidders September 12, on Sec. 5, 7th Ave. subway.

Buffalo—Canadian Northern R. R. is reported to be planning immediate construction of line from Toronto to an entrance to Buffalo.

New Jersey

Madison—Hyde, McFarlin & Burke Co. was awarded contract for elimination of grade crossings through Madison, for Delaware, Lackawanna & Western R. R.

North Carolina

Whitney—S. I. Scheffer, who has recently been operating a 70-C Bucyrus shovel for the Hardaway Contracting Company, is running the same machine for Rinehart & Dennis Co. on their tunnel contract here.

Cognac—L. H. Kirby is operating a Class 80 Atlantic shovel for the Vaughan Construction Company at this point.

Palmersville—W. G. Fix is operating a Bucyrus shovel for Hardaway Contracting Company at this point.

Elkin—Elkin & Allegheny Ry. has completed surveys and has received construction capital for 23 mile extension, Daughton to Sparta, N. C. Date for awarded construction contracts has not been decided on. John A. Mills, Raleigh, N. C. president; C. S. Currier, Elkin, N. C., chief engineer.

Ohio

Nova—E. H. Dale is craning a Bucyrus shovel for Mac Arthur Bros. Co. on the L. A. & S. R. R. here.

East Toledo—F. H. Woods is operating an 85-D Vulcan shovel for the Franre Slag Co., East Toledo.

East Toledo—J. F. Adams of Columbus, Ohio, is progressing nicely with his Hocking Valley contract, building docks and yards on the Maumee river front in East Toledo, Ohio. They are using one large Vulcan Giant D boom shovel; also they are working one large Marion shovel. N. J. Wilbert is operating the Vulcan shovel.

Pennsylvania

North East—L. P. Bonnell, who with Thomas P. Kellerher, holds the highest record on the Panama canal for 45 and 70 ton shovels, is at present here. Both these records were held by Bucyrus machines which, Mr. Bonnell states, were always put "where they had hard sledding and they stood the test".

Sand Patch—Baltimore & Ohio railroad is considering construction of cutoff from its Connellsville division across mountain from Sand Patch, Pa., through Frostburg, Md., connecting at Brady, Md., with main line. Cost has been estimated at about $2,000,000. F. L. Tuart, Baltimore, Md. is chief engineer.

Milport—F. H. Clement & Co., Land Title Bldg., Philadelphia, have started work on branch of Lehigh & New England R. R. from Lehigh Gap to east plant of New Jersey Zinc Co., at Millport.

Homer City—Geo. W. Bickerstaff is with the Miller Construction Co. here at work on a Bucyrus shovel.

Girardville—The photograph shows a 40-R Bucyrus shovel in the Reliance stripping of the Philadelphia & Reading Coal &

Iron Company at Mount Carmel, Pa. The shovel is loading coal. Charles Klinger is operating, Clayton Smith craning and S. Williams firing.

Lawrence—H. H. Hunter is operating an 85-C Bucyrus shovel for John Marsch at this point.

Tennessee

Memphis—Surveys for the final location of ditches and levees in the Inter-River drainage district, Butler County, Missouri, have been started by the Morgan Engineering Company of Memphis. They plan to complete the survey about February 1st, after which their report will be filed and the assessments made. Contracts for construction of the work will not be let before spring.

Oneida—Oneida & Western railroad will award contracts soon for construction of 10 miles of railroad west from Oneida, Tenn. Total length of company's proposed line will be 25 miles. R. J. Moscorp, Oneida, is chief engineer.

Texas

Belleville—Nueces Valley, Rio Grande & Gulf railway will soon purchase construction equipment. Company contemplates immediate construction of twenty-five mile railroad. W. A. Malthaet, Belleville, Tex., is president.

Virginia

Charlottesville—Contracts were awarded by Buckhannon & Northern railroad to Reinhart & Dennis Co., of Charlottesville, Va., for five mile extension of line from Catawba into Fairmont, W. Va. Cost of extension, including right of way and bridge across Monongahela river, is said to be approximately $800,000.

Washington

Raymond—Oregon-Washington R. R. & Navigation Co. has completed surveys for a 45 mile line to Raymond and South Bend on Willapa Harbor. Beginning on construction, however, may be delayed for a year. The line will cost about $4,000,000.

Wisconsin

Merrill—J. H. Flick Construction Co., 275 Old Colony Bldg., Chicago, Ill., has sublet following work on its 18 mile contract for line from Merrill northwesterly for Chicago, Milwaukee & St. Paul Ry.: A. D. MacRae, 40,000 cubic yards steam shovel work; Stacker & Co., 3 miles, 90,000 cubic yards. The first four miles out of Merrill will be done by the Flick Co. There are also 75 station men at work, 25 teams and 30 men clearing. The railroad will do the bridge work.

Black River Falls—Alex McGavock, Beloit, Wis., has finished his work at this point in connection with refilling the flood section, and has a 70-C shovel and equipment idle and is in the market for other work.

Wyoming

Guernsey—Kilpatrick Bros., Beatrice, Neb., awarded contract of 15 mile line from Guernsey to Wendover to connect the C. B. & Q. R. R., and the Colorado & Southern. It will cost about $750,000.

Little Willie's father found his youthful son holding up one of his rabbits by the ears, and saying to him: "How much is seven and seven, now"?

"Bah!" the father heard the boy say, "I knew you couldn't. Here's another one: Six and six is how much"?

"Why, Willie, what in the world are you doing with your rabbit"? asked the father.

"Willie threw the rabbit down with disgust. "I knew our teacher was lying to us", was all he said.

"Why, how"? asked the father.

"Why, she told us this morning that rabbits were the greatest multipliers in the world, and this dummy can't even add".

POSITIONS WANTED

ASS'T. SUPT. OR GEN'L. FOREMAN

Steam Shovel Work Preferred—8 years experience, with best recommendations in Railroad, Dam, Foundation and Heavy Concrete—Practical Civil and Mechanical Engineer capable of operating in a pinch any class of machine used in construction. Reputation of hustler under all conditions. WILLSON B. JONES, Care of Excavating Engineer, P. O. Box 607, Milwaukee, Wis.

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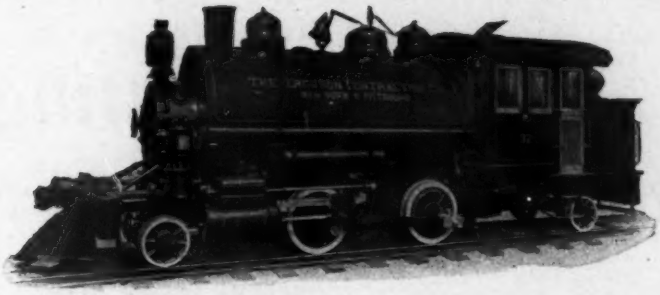

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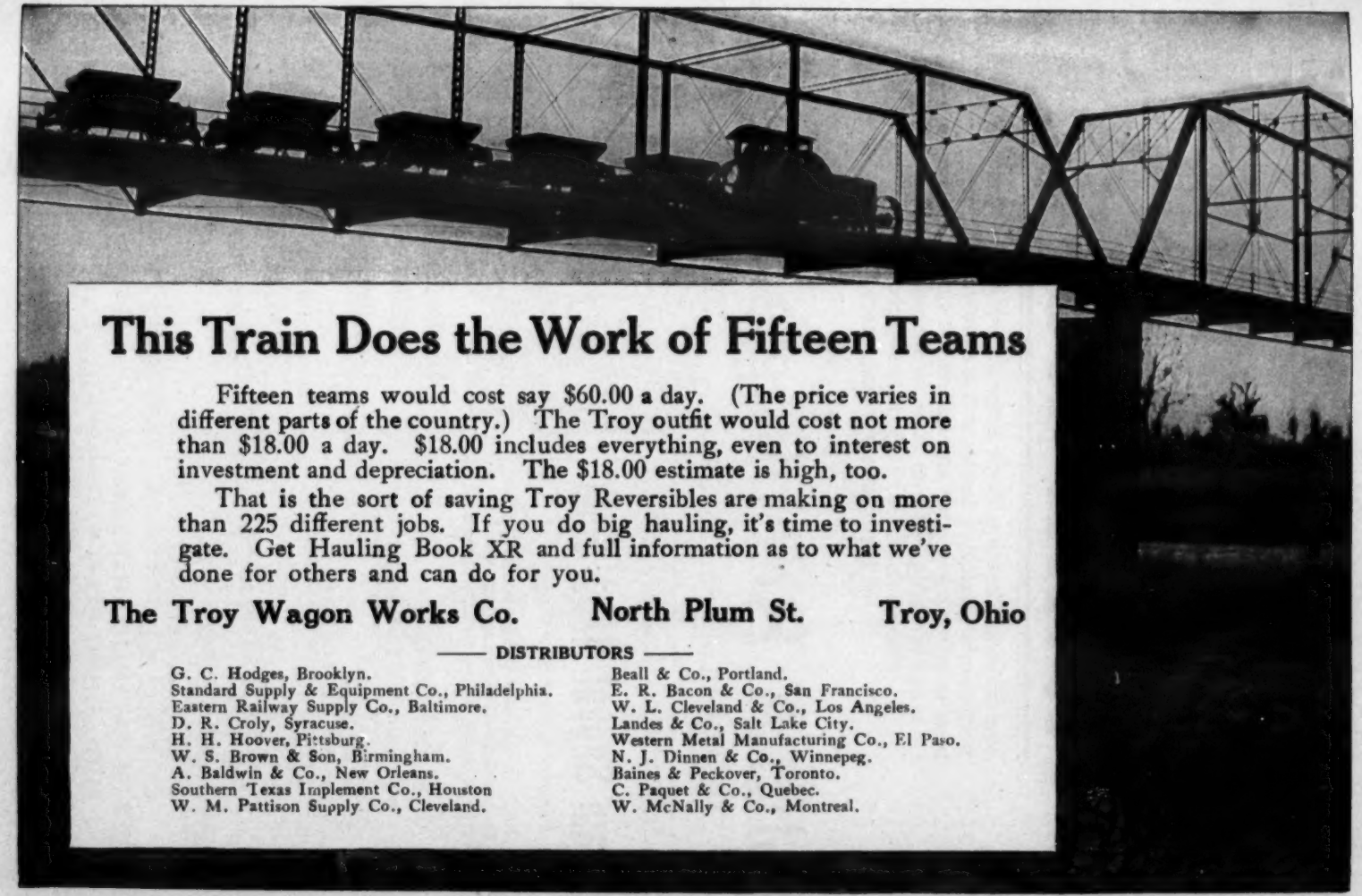

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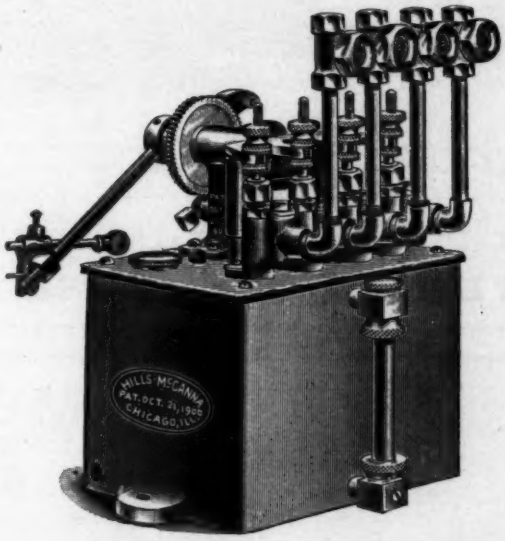

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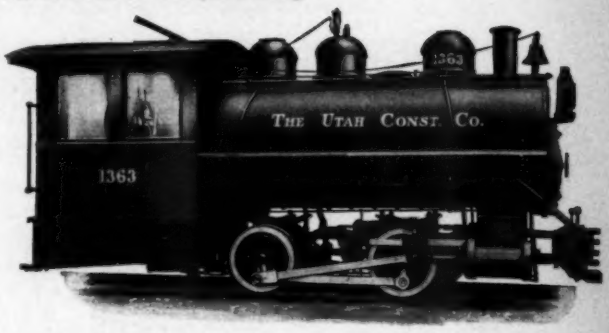

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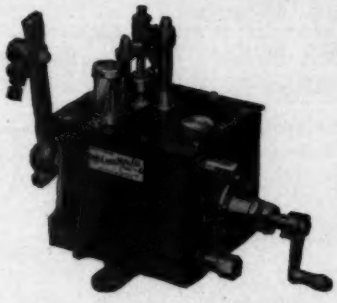

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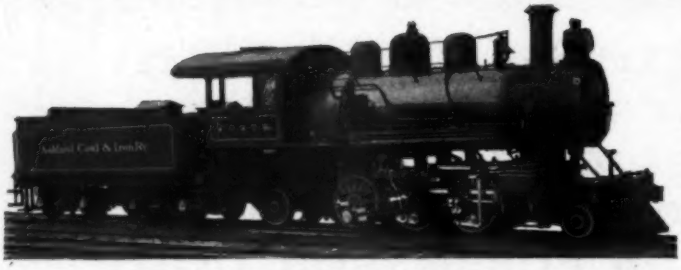

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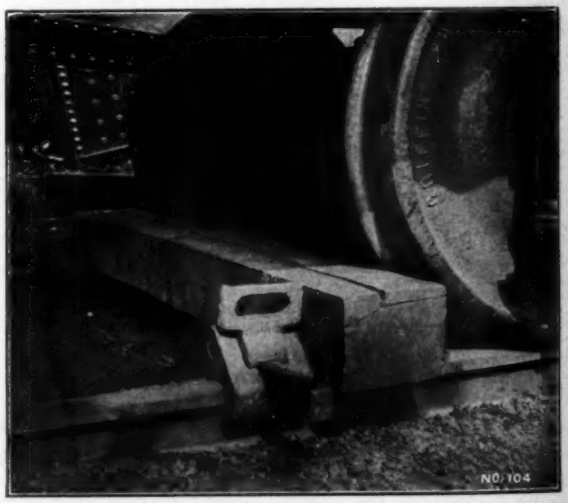

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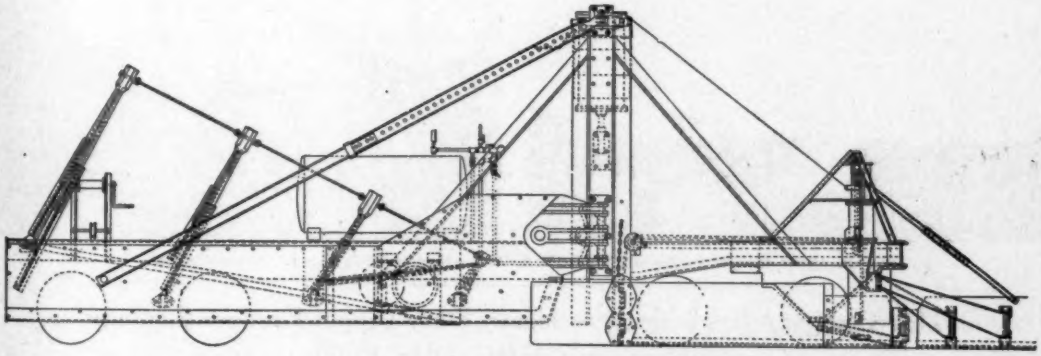

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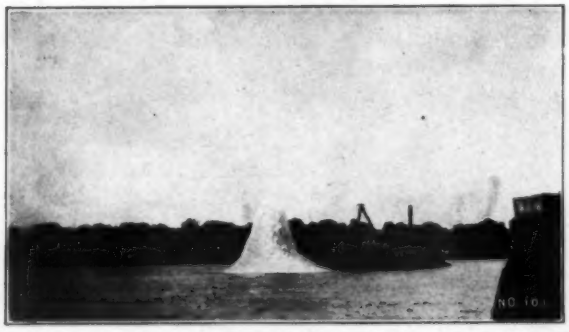

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